

T-121.5600 Usability Evaluation

On-line Sports Betting



Report

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Abstract

WinOne Event Betting is European Game & Entertainment Technology (EGET) company's product for online sports betting. It is in use with for example Ålands Penningautomatförening (PAF) that offers online sports betting in the internet using the product. Through PAF's www pages the usability of the product was evaluated as part of the course T-121.5600 Usability Evaluation of Helsinki University of Technology in autumn 2005. The functionalities of finding a certain event, selecting the desired bet, placing the bet and viewing pending bets and Result Center were included in the evaluation. The focus was to study the usability of the system from the perspective of a new user who is somewhat interested in sports and may have used other online sports betting services before. The evaluation consisted of heuristic evaluation as an expert evaluation method, usability testing with five users, and an informal walkthrough with one user. With these evaluation methods the learnability, error-freeness and satisfaction aspects of the system were examined.

The main problem areas found in the heuristic evaluation include the layout of the main betting view being inconsistent, the www pages not being compatible with all browsers and the existence of overlapping and confusing navigation. The most significant problems found in the usability testing include understanding how to make a bet, having critical items too close to each other and the lack of feedback after confirming a bet. The usability evaluation with the users also revealed some good features of the system including wager amount of shortcuts in the coupon and that the basic bet can be made very easily and quickly. The main suggestions for improving these problem areas include improving the general graphical appearance, layout, browser-compatibility and scalability, leaving more space between different odds as well as replacing the Result Center with pages that only consist of information related to the event in question and adding context related help.

The results of examination of the learnability aspect of making a bet concluded that the first bet takes significantly more time, because users were at first a bit confused about how to make a bet. However, after short time of trying, the user discovered how to make a bet and this was no longer a problem. Instead some problems were caused by the difficulty of navigating to the desired event. Studying of the error-freeness aspect revealed that minor errors were mostly related to navigation problems and critical errors were related to the lack of feedback after confirming a bet. Also, the concept of making system bets proved to be too difficult for some users.

The users needed help from the test instructor in two occasions. Firstly, most of the users did not have the patience to wait for the Result Center page to load. Secondly, some users did not know how to get back to the betting view after accidentally exiting it by for example clicking the PAF.fi logo in the upper left corner. The examination of the satisfaction aspect uncovered that the users felt that the system was slightly more difficult to use than regular betting or other online sports betting services. The system appeared to be fast with the exception of the Result Center and sometimes confirming a bet.

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1 Introduction

Providing sports betting service platforms for sports betting companies is a business where getting new customers is extremely difficult. In order to ease this and to keep their current customers pleased, sports betting service providers constantly look for ways to develop their products. They explore ways to use new technologies like mobile networks or interactive digital television (iTV) or ways to improve current internet-based services. One way to gain more competitiveness is to make the services more usable. More usable services mean more pleased customers for the sports betting companies, which in turn make them more willing to use the service providers' products. In this scope this document describes a usability evaluation conducted for the European Game & Entertainment Technology (EGET) company as part of the course T-121.5600 Usability Evaluation of Helsinki University of Technology in autumn 2005.

The evaluator group consists of Jaakko Kolmonen and Antti Nummiahho as students of the department of computer science and engineering of the Helsinki University of Technology, Mikael Runonen as a student of the department of communications engineering of the Helsinki University of Technology and Hanna Jäkälä as a student of the department of psychology of the University of Helsinki. All evaluator group members have gained background knowledge in the area of usability through the studying several usability related courses.

2 On-line Sports Betting Service www.paf.fi

This chapter describes the On-line Sports Betting service. The user interface and the most important functions are introduced. Also typical users and the user environment are explained.

2.1 User Interface

Main view of the Betting service is shown in Figure 1. The most important features are numbered and explained.

The screenshot shows the PAF.fi website interface. At the top, there is a header with the PAF logo and user account information: NIMI: TEST USER1, PELITILI: 24,00 €, KASINO: 0,00 €, POKER: \$0.00. Below the header are navigation buttons: TILI, POSTILAATIKKO, INFO, FAQ, PALAUTE, LOPETA, and a green button 'Valitse peli'. The main content area is titled 'Pelikohteet' and features a filter menu on the left (Jalkapallo, Jääkiekko, Viihde, Käsipallo, Salibandy) and a list of betting events on the right. The events are categorized by league (Suomi - Veikkausliiga, Brasilia - Serie A) and date (04.10.2005, 05.10.2005). Each event shows the time, teams, and betting odds for 1, X, and 2 outcomes.

Time	Joukkue 1	Joukkue 2	1	X	2	Lisää
18:55	FC Inter	FC Haka	2,70	3,15	2,55	8 >
Brasilia - Serie A						
04.10.2005						
23:00	Coritiba	Goiás	2,10	3,15	3,15	
23:00	Ponte Preta	Juventude	1,75	3,40	4,10	
23:00	Santos	São Caetano	1,45	3,70	6,75	
23:00	Atlético Mineiro	Paraná	2,00	3,25	3,30	
05.10.2005						
23:00	Fluminense	Corinthians	2,10	3,20	3,10	
23:00	Fortaleza	Atlético Paranaense	1,80	3,35	3,90	
23:00	Internacional	São Paulo	1,90	3,30	3,55	
23:00	Vasco da Gama	Cruzeiro	2,15	3,20	3,00	
JÄÄKIEKKO						
Suomi - SM-liiga						
04.10.2005						
18:25	Blues	HPK	1,80	4,35	3,40	8 >
18:25	Ives	Pelicans	1,60	4,55	4,25	8 >

Figure 1: The main page for sports betting.

1. Main menu that has links for example to pending bets.
2. Menu from which one can choose the events that are shown on the main view based on the league and the gaming product.
3. Direct links for showing events, which are to be played within the current day (within one hour, within six hours or within the day).

4. Menu that can be used to limit the leagues of which events are shown on the main view in a more detailed way.
5. The main view that shows the actual betting events. By selecting the desired odds one gets the coupon page to place the actual bet. The fields of the "More"-column (i.e. "8 >>") lead to a page that lists all available gaming products for the event.

The user interacts with the interface by clicking hyperlinks and different buttons. In the betting view illustrated in Figure 1 user can select different matches to the coupon by clicking the odds. Coupon opens and user can set a wager for that bet. After that, user must confirm the bet.

The user interface consists of many different similar looking sites. Figure 2 shows all gaming products for a certain event.

The screenshot shows a betting website interface for PAF.FI. At the top, there's a navigation bar with user information (NIMI: TEST USER1, PELITILI: 24,00 €, KASINO: 0,00 €, POKER: \$0.00) and buttons for TILI, POSTILAATIKKO, INFO, FAQ, PALAUTE, LOPETA, and Valitse peli. Below this is a menu with Vedonlyönti, Tulospalvelu, Avoimet vedot, Pelihistoria, and Profiili. The main content area is titled 'Pelikohteet' and shows a filter for 'Liiga' (Kaikki) and 'Pelituotteet' (Voittajaveto). A sidebar on the left lists various sports categories like Jalkapallo, Jääkiekko, Viihde, Käsipallo, and Salibandy. The main table displays betting products for the match 'FC Inter - FC Haka' on 04.10.2005 at 18:55. The table includes sections for 'Pelin sulkeutumisaika', 'Tulosveto', 'Puoli aika/lopputulos', 'Ensimmäinen maali', and 'Kokonaismaalimäärä'.

FC Inter - FC Haka						
Pelin sulkeutumisaika						
04.10.2005 18:55	1X2	1	2,70	X	3,15	2
						2,55
Tulosveto						
04.10.2005 18:55	1-0	6,30	0-0	6,85	0-1	5,95
	2-0	11,00	1-1	5,15	0-2	10,00
	2-1	9,55	2-2	16,00	1-2	9,05
	3-0	30,00	3-3	105,00	0-3	26,00
	3-1	26,00	MX	150,00	1-3	23,00
	3-2	43,00			2-3	41,00
	4-0	110,00			0-4	85,00
	4-1	90,00			1-4	80,00
	M1	60,00			2-4	140,00
					M2	80,00
Puoli aika/lopputulos						
04.10.2005 18:55	1/1	4,50	X/1	5,75	2/1	27,00
	1/X	15,00	X/X	4,50	2/X	15,00
	1/2	25,00	X/2	5,50	2/2	4,10
Ensimmäinen maali						
04.10.2005 18:55	Kotijoukkue	1,90			Vierasjoukkue	1,80
Kokonaismaalimäärä						
04.10.2005 18:55	< 2					2,40
	2					3,00
	3					3,75

Figure 2: All gaming products for a certain event.

A bet coupon includes different bets the user has chosen to make. Coupon opens up on the upper left corner of main view of the Betting service. A typical coupon can be seen in Figure 3.

Figure 3: Bet coupon.

The user has a possibility to look at different bets made earlier. These bets are in the section on open bets. View of that site is showed in Figure 4.

Vedon nro.	Vedon vahvistamisaika	Pelituote	Summa	Kokonaiskerroin	Mahdollinen voitto	Yksityskohdat
812545	04.10.2005 08:35	Yksittäiskohde	2,00	15,00	30,00	Lisää
812532	04.10.2005 08:33	Yksittäiskohde	2,00	25,00	50,00	Lisää
812471	04.10.2005 08:19	Yksittäiskohde	2,00	4,80	9,60	Lisää

Figure 4: Open bets.

2.2 Most Important Functions

The most important functions are selecting the desired bet, placing the bet and viewing open bets. 1X2 is by far the most important sports betting product. The second most important is the correct score. Different sports betting products that are used in our usability tests are presented shortly in the following.

- 1X2

Guessing the winner of the match. Betting mark 1 means that team 1, which is usually the home team, wins. X means a draw. Betting mark 2 means that team 2, which is usually the away team, wins.

- Correct Score

Guessing the correct final score of the match. The odds for different goal score alternatives are given.

- Half-time/Final Result

Guessing the outcome of the first half and of the final result.

Example: Team 1 meets team 2.

a) Half-time result 2-0. The match ends 2-2. Correct betting result: 1/X

b) Half-time result 0-1. The match ends 2-1. Correct betting result: 2/1

- First Goal

Guessing which team scores the first goal of the match.

- Guess the Time of the First Goal

Guessing the time of the first goal of the match.

The bet can be placed on a single event or by combining several events. Different betting types are presented in the following.

- Single

Betting on only one event.

- Double

Betting on two events that both have to be right in order to win the bet.

- Triple

Betting on three events that all have to be right in order to win the bet.

- Long

Betting on more than three events that all have to be right in order to win the bet.

- Betting Systems (standard, trio, quartet)

In standard betting several betting marks are selected for a single event. In trio there has to be at least 4 and at most 10 events. From the selected events the gaming system automatically generates all possible combinations of three events. This enables winning without having to get all the events right. Respectively in quartet there has to be at least 5 and at most 10 events and the gaming system automatically generates all possible combinations of four events.

2.3 User Environment

The technical user environment of the sports betting service is WWW. Things that may be found in the physical environment include a computer and some betting related magazines. The betting service can be used at home or at work and the user is typically alone. The service is mostly used during the afternoon, because the sports events usually take place in the evening. One typically uses the betting service in order to make following different sports events more exciting and trying to guess the right result. One can follow the sports events on the spot or for example from a television, radio, text television or internet. Sometimes the final results are only checked after the matches are over.

2.4 Typical Users

75% of the users of the on-line sports betting service www.paf.fi are male. Most of these are at the age of 18-40, although quite a lot of men aged 41-60 play as well. The most common age range among women is 31-40, although there are also quite active female users aged 18-30 and 41-50. The users are typically somewhat interested in sports and know how to use WWW-based internet services. (Piirainen, 2005)

3 Goals of the Usability Research

In this research we look for ways to develop the betting service of www.paf.fi for new users of the system. We are especially interested in the functions of finding and selecting a desired betting event, placing the actual bet and viewing pending bets. We concentrate on the learnability, errors and satisfaction aspects of the service, as these are the most important usability criteria for a new user. To get excited from using the betting system, a new user has to be able to use the service quickly and easily and without making errors, which could frustrate him and reduce the satisfaction effect of the service.

Learnability is studied by measuring how much faster and with how many less errors or deviations from the optimal route a similar task can be accomplished when repeated several times.

The errors are categorized as critical errors and minor errors. Critical errors prohibit the user from finishing the task without correcting them. Minor errors allow the task to be finished. It is also measured how many of the minor errors the user notices and fixes and how many get by unnoticed. Other ways to measure errors include: how many times the user ends up on an error page and how many times the user gets as stuck in the system so badly that he requires the test instructor's help.

The satisfaction is measured by asking the users to compare the service to regular sports betting (in a kiosk for example) and to other online sports betting services if the user has any experience on them. The user is also asked how safe and how fast he experienced the system.

The following Table 1 summarizes different measuring practices and meters for different usability criteria.

Table 1: Usability Criteria

Usability Criterion	Measuring Practice	Meter	Estimated Current Level	Highest / Lowest Acceptable Level	Target Level	Best Achievable Level
Learnability	Repetition usability test task: "you want to make a bet, in which x is the winner of the match x-y" which is repeated three times for different teams	Errors in repeating a similar task	3	2	1	0
Learnability	Repetition usability test task (see above)	How much faster the task is accomplished the second time	40 %	33 %	50 %	90 %
Learnability	Repetition usability test task (see above)	How much faster the task is accomplished the third time compared to the second time	15 %	10 %	25 %	80 %
Learnability	Repetition usability test task (see above)	How many deviations from the optimal route while repeating a similar task	5	3	1	0
Errors	All usability test tasks	How many times the user ends up on an error page	3	1	0	0
Errors	All usability test tasks	How many times the user needs help from the test instructor	5	2	1	0
Errors	All usability test tasks	How many times the user make a minor error that he don't notice	2	0	0	0
Errors	All usability test tasks	How many times the user make a minor error that he immediately fix	4	3	2	1
Errors	All usability test tasks	How many times the user make a critical error	1	0	0	0
Satisfaction	Questionnaire	Answer to the question "the system was usable in contrast to making bets in kiosks" on a scale of 1-5	3	4	4	4
Satisfaction	Questionnaire	Answer to the question "the system was easier to use than other online betting systems" on a scale of 1-5	2	4	5	5
Satisfaction	Questionnaire	Answer to the question "the system appeared to be secure" on a scale of 1-5	4	3	4	5
Satisfaction	Questionnaire	Answer to the question "the system appeared to be fast" on a scale of 1-5	4	4	5	5

4 Evaluation Methods

Usability evaluation was performed by two different methods. Heuristic evaluation was chosen as the expert evaluation method and after that the system was tested by usability testing with users. With heuristic evaluation were looking for general usability problems of the system. Additionally cognitive walkthrough as the expert evaluation method was thought out but it was never performed properly. Results of the tests are examined in later chapters.

4.1 Heuristic Evaluation

Heuristic evaluation was chosen as the expert evaluation method for this research. With it the general usability problems of the system were found.

Heuristic evaluation is usability evaluation without users. It is a simple, fast and cost-effective way to search for user interface's problem points. With heuristic evaluation one finds general usability problems like strange terms, inconsistencies in system's vocabulary and layout and unnatural ordering of buttons and text fields. Heuristic evaluation does not however take a stand on how useful the system is, that is, how well it fits its intended purpose. So, heuristic evaluation does not replace usability evaluations with the users. In heuristic evaluation the different parts of the user interface are checked against a list of known usability principles, which are called heuristics. Heuristic evaluation is carried through either by going through the system one display at a time and with each display checking its parts against the heuristics or by selecting one heuristic at a time and going through all displays checking them against the selected heuristic. (Riihiaho, 2005)

The most widely used list of general usability principles is Nielsen's ten usability heuristics (Nielsen, 1993), which were used in this evaluation also:

1. Aesthetic and minimalist design
2. Match between system and the real world
3. Recognition rather than recall
4. Consistency and standards
5. Visibility of system status
6. User control and freedom
7. Flexibility and efficiency of use
8. Help for users to recognize, diagnose, and recover from errors
9. Error prevention
10. Help and documentation

Each member of the team participated in the heuristic evaluation. The evaluation was implemented in the following way. At first each evaluator investigated the user interface on

his own in a session of couple of hours. The user interface was investigated so that at first one created an overview of the system and after that one concentrated on the problems of the individual parts of the user interface. Each evaluator listed the usability problems that he discovered (short description of the problem and which heuristic it violated). After personal evaluations the different problem lists of all the evaluators were combined and discovered usability problems were prioritized on a scale of 0-4 where 0 represented something that wasn't really a usability problem and 4 represented a critical usability problem. The prioritization was made based on how often the problem occurs, how hard it is to recover from it and how easily one can learn to avoid the problem.

Results of the heuristic evaluation can be found in Appendix A.

4.2 Usability Testing

For usability testing with the users we chose traditional usability testing as well as informal walkthrough. With traditional usability testing we aimed to find general usability problems and with informal walkthrough we concentrated on the learnability and intuitivity aspects of the system. The last one of tests was the informal walkthrough and all the others were traditional usability tests. The different test tasks performed by users in traditional usability tests are listed in Appendix B.

Informal walkthrough is a great method to do usability testing to sports betting web site because the system is ready to use. Furthermore test users are new and in informal walkthrough they can get familiar with the system, as they could do it at home. While doing informal walkthrough test user uses functions that he could naturally use when starting to learn and use the system. In the case of walkthrough learnability and intuitivity aspects can be observed carefully. Test user has to be familiar with common betting activity so he may have a bit of understanding how to use the system. Test leader participates to test only if test user needs some help. No test tasks will be given to the test user during the informal walkthrough.

5 Usability Test Sessions and Users

This chapter describes practical details of arrangements of usability tests. Additionally test users are introduced shortly.

5.1 Test Situation

A total of six different usability tests were done, including the pilot test. All tests were held 2005/10/20 - 2005/11/04 in the Usability Laboratory of Helsinki University of Technology. Usability laboratory was an excellent place to arrange these usability tests because all the devices needed were there already. The most important machine was a computer with Internet connection. Figure 5 shows placing of devices and people during usability tests in the floor plan of laboratory.

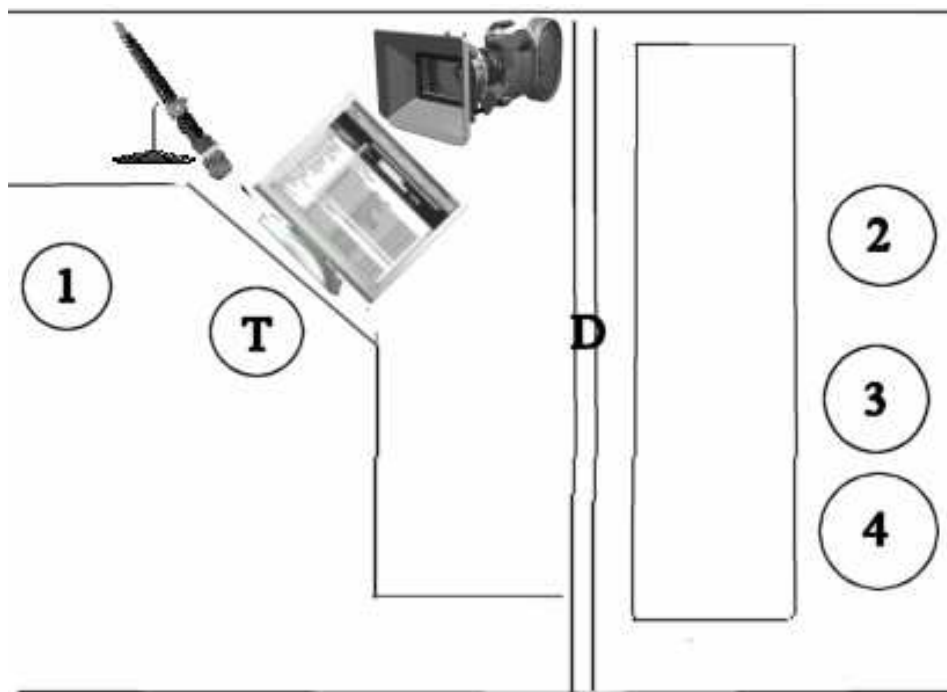


Figure 5: Placing of devices and people during test. T = test user. 1 = leader. 2-4 = observers. D = dichroic mirror. Devices: computer screen, video camera and microphone.

All the tests were recorded on videotape. Main focus was in the computer monitor picture, which was captured to videotape directly. Additionally a video camera was used to record the face of the user. The camera was placed on the ceiling of the room. Test users were interviewed after actual tests. Also those interviews were recorded.

Duration of one test was approximately one hour including the total time test user spent in the Usability Laboratory. Duration varied depending on how much user was willing to think aloud during the test and talk in the interview after the actual test. Shortest usability test endured 45 minutes and longest about 90 minutes. Before the test session the test room and

devices were prepared so the test could be started immediately when user arrived at the test place.

Some technical problems emerged during test sessions. The first test after the pilot test had to be ended after only a few tasks were done, because the PAF's www system didn't work. Technical problems emerged also before the fourth test, but they were successfully repaired by EGET. The representative of the customer had intended to attend the second test session, but because of the technical problems, he was forced to try to attend another (fourth) test session. Because of the problems with the system, he wasn't able to attend the test wholly. Accordingly, the representative of the customer was unfortunately prevented from attending a whole test session.

All the members of the research group led at least one test session. This way everyone practised working with the user. During the actual test only the leader was in the same room with the test user. Leader was the only one who communicated with the user during the test. Meanwhile the others observed behind the dichroic mirror. Observers wrote down if test users finished test tasks successfully or didn't do that. Observers also kept track on errors that the test users made. They also kept time on time specific test tasks.

Observers gave some feedback to the test leaders after the test sessions. All tests were successfully led. In the beginning of a test session the leader introduced the system that was to be tested with the test user. The test user was encouraged to think aloud while performing the test tasks. Before the actual test, the leader introduced the test user an example of how to think aloud. By using thinking aloud method, problematic situations and reasons for them came up more explicitly.

The test leader gave the tasks one by one orally and after the task was given orally it was also given in paper. This way the test user was able to check what the task literally was. This was done quite often, because there were lots to remember when several names of different leagues were mentioned.

Test users were considerable willing to give their comments about the betting system and managed to speak aloud their opinions and thoughts. Occasionally the test leader asked for specifics when the test user was speaking.

5.2 Interview after Test

Test user was interviewed after the actual test. Each test user was provided with a questionnaire which can be found in Appendix C. That way quantitative information of subjective satisfaction of users was collected. The results of the questionnaire can be found in Appendix D. Also verbal comments were interesting. That is why the user was asked to give freely any comment about how easily the system can be learned and used. Purpose was to get answers to following questions.

- Generally, how it was like to use the sports betting web site?
- What were the worst problems while using the system?
- What were the single problems while betting?
- Do you think there are some functions in the web site, which were unclear?
- Were there some unfamiliar words in the web site?
- Do you think there was some unnecessary information on the web site?
- Do you think you had enough instructions in the web site on how to make a bet?
- Do you have some concrete proposals for improvement?
- Do you feel that updating or loading of any part of web site was too slow sometimes?

5.3 Arrangements after Pilot Test

The practical arrangements of the pilot test worked well and no need for adjustments arose for those.

However, the test tasks were modified after the pilot test. Some terms were too betting specific (i.e. triple bet) and therefore not necessarily user's terminology. The repetition task was originally "x and y play even", but it became clear that this could be interpreted as 1X2 or correct score betting product and was therefore modified to "x is the winner of the match x-y". Also, a hint to make only one bet had to be included in the task where the user could freely choose what bet he made in order to not let the user spend too much money from the gaming account.

There was also a task in which one team was playing in two competitions (UEFA Cup and national league), which confused the user. We decided to make sure this wouldn't be the case in the actual test tasks. The pilot test user also never set the betting amount manually to the text field, but used the quick links instead. Therefore, a suggestion to use three euros was added to a certain test task in order to force the user to enter the value manually. A few other minor corrections were also made.

In addition, the pilot test only lasted for a little over 30 minutes and most of the tasks seemed pretty straightforward and easy for the user. This led us to create five more test tasks to test some of the more complicated features of the system. These tasks include making a correct score bet including multiple scores, making a 1X2 bet including multiple choices (i.e. both 1 and X), creating a quartet gaming system for five or more events, betting on the halftime/fulltime gaming product and betting on the time of first goal gaming product.

For the interview after the test, we decided to emphasize that if there were phenomena that occurred frequently during the test, the test leader asked about them. For example, one phenomenon was; if the user always checked open bets to see that the bet he just made was accepted.

5.4 Test Users

The users were all male and aged 23-39, which is approximately also the largest user group of the service according to PAF. Requirement for to be able to be a test user was that one manages quite well the use of computer and internet services. Also the test users had to be interested in sports and to know basic features about betting. Test users were new to the system that was tested. All of them were brothers or friends of test team members. Business gifts provided by PAF and EGET were given to all the test users after the tests.

A total of six users tested the system. The first user was used in the pilot test and the last user performed an informal walkthrough. The backgrounds of the users are listed in Table 2.

Table 2: Test Users

User	Age	Gender	Background (education, occupation)	Interest in Sports	Experience in Using Computer and Internet Services	Betting Knowledge
1 (pilot)	26	male	Technical student	Most interested	Expert	Average
2	29	male	Technical student	Very interested	Expert	Expert
3	25	male	Master of Science	Fanatic	Expert	Expert
4	39	male	Public servant	Exceedingly interested	Average	Expert
5	25	male	Information Technology and Communications	Very interested (mainly ice-hockey)	Expert	Average
6 (informal walkthrough)	23	male	Technical student	Very interested (mainly ice-hockey)	Average	Some

5.5 Analysis of test results

After all the tests sessions were carried through and all tests were videotaped, the research group met and watched the videotapes. Videotapes were analysed according to criteria, which had been assessed before the tests (see Table 1: Usability Criteria). Before watching the videotapes, the different criteria were divided to each member of the group to be followed from the video. One for example counted the time used for doing the repeating task and the other counted the minor mistakes, which the user noticed and repaired, that occurred during other than the repeating tasks. While watching the tapes, members accounted each factor in every test and in every test task. The results from the criteria can be seen in chapter 6.6.

During and after watching the videotapes, the group counted the usability problems and decided after several conversations, which were the main, average and minor problems in the betting system according to all usability tests that the group carried through. Some of the problems were self-evident and had been found in the heuristic analysis (see for example page 39 and chapter 6.3 problems 2 and 3) and some of the problems occurred mainly in the tests. The main problems and suggestions for improvement are introduced in chapter 6.3 and after them the average and minor problems are introduced.

6 Results

This chapter describes results of usability testing made to the betting system. The beginning of this chapter focuses on the usability problems found in usability tests. Betting system's good features are only shortly described. Other results from the main interests in the research are described in chapter 6.6. At first the good features are described shortly to emphasize the features that should not be changed. The original main betting view is illustrated in Figure 9 and the new main betting view in Figure 10. After that the individual problems and suggestions of their improvement are gone through. Finally the realizations of the usability criteria defined in chapter 3 are examined. A summary of the results including whether the problems were found in heuristic evaluation, user tests or both and an assumption of the difficulty of realizing the suggestions of improvements can be found in Appendix E.

The suggestions of improvement were evaluated with a user by asking him to compare pictures of the current user interface and our improved user interface according to some relevant criteria based on the user interface function in question. Which one of the two pictures or series of pictures was the original, and which was a suggestion for improvement, was not revealed to the user and the placing of the pictures was varied so the original and the suggestion weren't always in the same place. As a summary, the user found most of the suggestions of improvement better than the original solutions. The detailed results of the evaluation can be found in Appendix F. The suggestions of improvement were also discussed with company's contact person Anssi Piirainen, who has been strongly involved in the development of the current system. He basically agreed that all of the suggestions were well-founded and generally good ideas. More details on the feedback of the company's contact person can be found in Appendix G.

6.1 Good Features Based on User Tests

Not only problems but also some good details were found during usability tests. Users approved these features and they are good and should not be changed.

1. Wager amount shortcuts

Users prefer using shortcuts rather than writing the wager. Shortcuts are easy and fast to use. The wager amount shortcuts are illustrated in Figure 6.

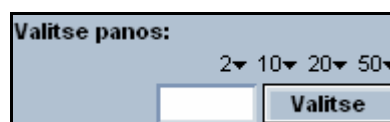


Figure 6: Wager amount shortcuts.

2. Handy league link list in the left

Compared to option menu, link list is easy and fast to use. Only one clicking is needed to see games of different leagues. The handy league link list is illustrated in Figure 7.

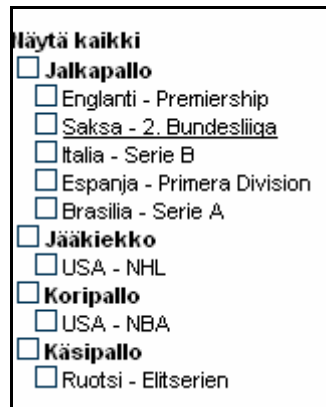


Figure 7: Handy league link list.

3. Basic bet can be done by only a few clicks

Users are satisfied with the light way to make a bet by just clicking only a few hyperlinks and nothing more.

4. Trash can symbol is intuitive when removing an individual game from a coupon

Users didn't first notice the trash can symbol, but found it immediately when they needed it. The trash can symbols are illustrated in Figure 8.

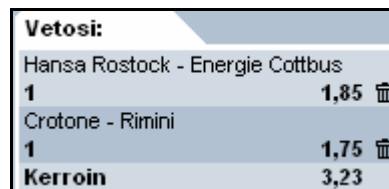


Figure 8: Trash can symbols.

5. There are no disturbing animations or useless information on the site

Users are happy because there are no disturbing animations on the betting site. Therefore no installers will pop up and users do not have to install any additional plug-ins.

6.2 The main betting view

In this chapter a picture of the original main betting view and a sketch of a new improved main betting view are presented. The changes are explained in detail in chapter 6.3.

The screenshot shows the PAF website interface in Microsoft Internet Explorer. The browser address bar displays 'https://secure.paf.fi - PAFin kansainvälinen pelipalvelu - Microsoft Internet Explorer'. The user is logged in as 'NIMI: TEST USER1' with a balance of 'PELITILI: 46,24 €'. The interface includes navigation buttons for 'TILI', 'POSTILAATIKKO', 'INFO', 'FAQ', 'PALAUTE', 'LOPETA', and a 'Valitse peli' button. The main content area is titled 'JALKAPALLO' and lists various football leagues and matches with their respective odds. A sidebar on the left contains a 'Kuponki' (bet slip) section and a 'Näytä kaikki' (show all) section with checkboxes for different sports.

Liiga	Pelituotteet	Tunti pelinkohteen alkamiseen!	Kuusi tuntia pelinkohteen alkamiseen!	Päivän lista!
Englanti - Premiership	Birmingham - Bolton	21:55	2,70	3,15 2,55 8 »
Saksa - 2. Bundesliga	Hansa Rostock - Energie Cottbus	21:10	1,85	3,30 3,75
Italia - Serie B	Crotone - Rimini	21:40	1,75	3,00 4,90
Espanja - Primera Division	Racing Santander - Deportivo La Coruña	21:55	2,90	3,05 2,30 8 »
Ranska - Ligue 1	Bordeaux - Paris SG	21:40	2,20	2,70 3,50 3 »

Figure 9: Original main betting view.

http://secure.paf.fi - PAFin kansainvälinen pelipalvelu - Microsoft Internet Explorer

NIMI: TEST USER2 PELITILI: 95,90 € KASINO: 0,00 € POKER: \$0.00

TILI POSTILAATIKKO INFO FAQ PALAUTE LOPETA **Valitse peli**

Etsi jopkkuetta Etsi **Vedonlyönti** Omat vedot Profiili

Tunti pelinkohteen alkamiseen! Kuusi tuntia pelikohteen alkamiseen! Päivän lista

Pelituotteet

1X2

Liigat

Näytä kaikki

Jalkapallo
 Italia - Serie B
 Jääkiekko
 Ruotsi - HockeyAllsvenskan
 USA - NHL
 Koripallo
 USA - NBA
 Salibandy
 Ruotsi - Elitserien

Näytä

JÄÄKIEKKO

Ruotsi - HockeyAllsvenskan

14.11.2005

sulkeutumisaika Joukkue 1 - Joukkue 2

		1	X	2	Muut
19:55	Bofors IK - Rögle BK	2,40	4,40	2,15	
19:55	IF Björklöven - Almtuna	2,15	4,40	2,40	
19:55	IK Oskarshamn - Växjö Lakers HC	1,75	4,85	3,00	
19:55	Nybro Vikings IF - Halmstad HC	1,28	6,25	6,00	
19:55	Skellefteå AIK - IF Sundsvall	1,15	8,50	8,00	
19:55	Västerås HK - Arboga IK	1,95	6,00	5,75	

USA - NHL

13.11.2005

23:00	Anaheim - Dallas	2,20	4,35	2,55	8 kpl
23:00	Chicago - Edmonton	2,40	4,40	2,30	8 kpl
23:00	Columbus - Los Angeles	2,95	4,40	1,95	8 kpl
23:00	Vancouver - Detroit	2,35	4,40	2,35	8 kpl
23:00	Anaheim - Dallas	2,20	4,35	2,55	8 kpl
23:00	Chicago - Edmonton	2,40	4,40	2,30	8 kpl
23:00	Columbus - Los Angeles	2,95	4,40	1,95	8 kpl
23:00	Vancouver - Detroit	2,35	4,40	2,35	8 kpl
23:00	Anaheim - Dallas	2,20	4,35	2,55	8 kpl
23:00	Chicago - Edmonton	2,40	4,40	2,30	8 kpl
23:00	Columbus - Los Angeles	2,95	4,40	1,95	8 kpl
23:00	Vancouver - Detroit	2,35	4,40	2,35	8 kpl

Kuponki

Tyhjennä

Vetosi:

Boston Utd - Swindon	
1	2,25
Oldham - Chasetown	
1	1,10
Oxford Utd - Eastbourne	
1	1,22
Burton - Peterborough	
1	3,15
Woking - Southport	
1	1,70
Kerroin	16,16

Järjestelmä:

Ei systeemiä
 Triplasyteemi
 Nelossysteemi

Valitse panos:

2€ 3€ 5€ 10€ 20€ 50€

Valitse

Vedon panos puuttuu. Aseta panokseksi 2 € - 200 €.

Internet

Figure 10: New main betting view.

6.3 Major Problems and Suggestions of Improvement

1. Option menu "Leagues"

Problem:

The option menu on top of the page for choosing a league is unnecessary since the league can also be chosen from the navigation area on the left. Users prefer choosing league from the link list in left margin. The overlapping navigation confused some users. Some mistakes were made when mixing those two navigation methods by choosing league from link list and product from option menu. It was also more difficult to find the desired league from the option menu. When choosing something from the leagues and products selection boxes, one has to click "Go" in order to actually make the choices happen. One could assume that the page would update immediately after selecting something from the selection boxes as this kind of behaviour is widely used in other systems. If one forgets to click "Go", the selection boxes may be left in a state where they have different leagues and gaming products selected than what is actually shown in the main betting view, which may confuse the user after a while. The original league/product selection is illustrated in Figure 11.



Figure 11: Original league/product selection.

Suggestion of improvement:

The "Leagues" drop-down menu should be removed and the "Products" drop-down menu should be placed on the left above the league link/checkbox list. Also, the ">> Go" button on top would become unnecessary. When one chooses something from the "Products" drop-down menu, it should automatically update the main betting view without a need to click a button. This way all the navigation is in one place and there is no overlapping navigation. The new league/product selection is illustrated in Figure 12.



Figure 12: New league/product selection.

2. Layout is not consistent

Problem:

The layout (column and row structure including placing of texts, heights, widths, padding etc.) of the main betting view varies depending on how one navigates in it. The layout is different depending on whether one navigates to a certain page using the two selection boxes on top, the left side "Betting objects" or "Back" button from the page that shows all betting products for a single event. This slowed down the user by making it harder to find what he is looking for and recognising the page he were at currently. It can also confuse the user and hinder his ability to use the service.

Suggestion for improvement:

The layout of the main betting view should look the same no matter how one navigates to it. The column and row structures including placing of texts, heights, widths, padding etc. should be consistent.

3. Feedback after confirming bet

Problem:

Users did not get enough feedback after confirming a bet and sometimes they weren't sure if the bet was confirmed when it actually was confirmed. Coupon looks very similar before and after confirming a bet. This is why a user may sometimes falsely think that he has confirmed a bet while in fact he has not. The original confirmation of a bet is illustrated in Figure 13.

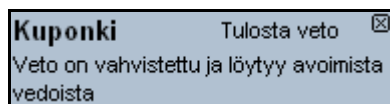


Figure 13: Original confirmation of a bet.

Suggestion of improvement:

The text that appears on top of the coupon when the bet is confirmed should be made more distinguishable by i.e. making its background green or making green borders around it. The new confirmation of a bet is illustrated in Figure 14.

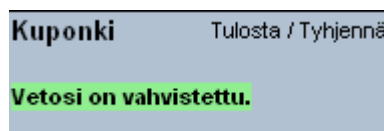


Figure 14: New confirmation of a bet.

4. Column "More" is confusing

Problem:

Column "More" is confusing. User does not understand the meaning of that column. Also, at the beginning of using the betting system few users didn't notice where the odds are. Column name "More" is odd and user does not realize at all what the number, for example "8 >>", means. The original "More" column is illustrated in Figure 15.

1	X	2	Lisää
1,75	3,35	4,75	8 >>
2,70	3,15	2,55	8 >>

Figure 15: Original "More" column.

Suggestion of improvement:

In the main betting view the "1", "X", "2" and "More"/"Lisää" fields should have their own title called "Products"/"Pelituotteet" and all the titles should be bold. Also the term "More/Lisää" should be replaced with "Others"/"Muut" and that column should be separated with a white vertical line like all the other columns. The contents of that column, i.e. "8 >>" should be changed to "8 pcs"/"8 kpl". These changes will help the user to better understand the contents the last column that contains the link to all gaming products of a certain event. The new "More" column is illustrated in Figure 16.

- PELITUOTTEET -			
1	X	2	Muut
1,95		1,95	
1,75	3,40	4,10	8 kpl
3,40	3,30	1,95	8 kpl

Figure 16: New "More" column.

5. How to make a bet?

Problem:

Users were confused about how to make a bet. Odds do not look like they have to be clicked to get a bet to a coupon. Underlining the odd is not enough when the user points it using the mouse. User does not notice underlining easily. Bolding or changing the colour of the odds was suggested in addition to the underlining. The coupon also does not appear in a natural place, which would be on the right instead of on the left.

Suggestion of improvement:

The underlining of odds is not visible enough. Our suggestion is to make the different links become bolded as well. This commonly used emphasis will be more visible to the user. Also, the underlining should not be removed, because it is a commonly used notation for links. As a summary, links should get bolded and underlined when the cursor is on top of them.

The coupon should be placed to a separate frame in the right side of the page. This is where the user is naturally expecting the coupon and also the coupon wouldn't confuse the league link list on the left anymore. In order to allow a third vertical frame to the page, the main betting view could be made a bit narrower and the page could be a few pixels wider. The coupon should also always be visible on the page. If there are no events selected to a coupon, all its functions should be disabled.

6. Critical items too close to each other**Problem:**

The different odds in different gaming products (1X2, Correct score etc.) and the preset betting amount links in the coupon are quite close to each other. Two users mistakenly clicked the result next to what he intended to click. This especially affects users who are not so familiar with computers or who have an impaired vision.

Suggestion of improvement:

Different odds in the main betting view, preset wager amounts in the coupon etc. should have more space between them both vertically and horizontally. This would make it easier for users to click the intended field. This is especially important for all fields that are related to the actual placing of the bet since there the user is using his money and would not want to make mistakes for example placing too much money accidentally. Also, the width of the main betting view should be larger, which would allow more space between critical items.

7. Details not available easily in open bets and settled bets**Problem:**

User had to press link "More" to see details of an open bet or game history. Users were almost always interested in seeing details of a bet so one extra clicking must be done every time. Also button "Details" do not show any details if no check box is checked. In that case user can make a mistake and think that no details are available. The original open bets are illustrated in Figure 17.

voimet vedot:						
edon nro.	Vedon vahvistamisaika	Pelituote	Summa	Kokonaiskerroin	Mahdollinen voitto	Yksityskohdat
119736	20.11.2005 15:27	1X2	2,00	2,55	5,10	Lisää <input type="checkbox"/>

Figure 17: Original open bets.

Suggestion of improvement:

The pages that contain open bets and settled bets should be combined into one page. Open bets should be listed in the beginning of that page and settled bets after them. This way the user can find all his bets in one place and does not get confused which page contains what he is looking for. All the details should be listed in the page immediately and the unnecessary checkboxes and buttons for details should be removed. The different fields should be arranged according to how important they are to the user. For example, the betting product and the event should be the two first fields and bet id. Probably one of the last. The winning bets should be emphasized more with for example a different background color. The new open bets are illustrated in Figure 18.

Avoimet vedot:										
Pelituote	Kohteet	Valinta	Kerroin	Kokonaiskerroin	Panos	Mahdollinen voitto	Vedon nro.	Vahvistamisaika	Alkamisaika	
1X2	HIFK - Jokerit	2	2,30	2,30	2,00	4,60	1078800	14.11.2005 14:08	17.11.2005 18:30	
1X2	Ilves - Tappara	2	1,80						17.11.2005 18:30	
	Lukko - Ässät	1	1,80	3,24	2,00	6,48	1078788	14.11.2005 14:05	17.11.2005 18:30	

Figure 18: New open bets.

8. Extremely slow and useless "Result Center"

Problem:

Result Center was found to be far too slow. First of all, most of the users thought that no results are available, because nothing appears on screen for several seconds after pressing the button "Result Center". Users were also unsatisfied with information found in the Result Center. There is also too much information to be viewed at once. Also no feedback is given if there are no query results. Users expected more background information such as league standings, earlier matches, betting tips, injuries and top scorers or starting line-ups.

Suggestion of improvement:

The Result Center as such does not seem to have much use. Our suggestion is to remove the result center totally and make the team names in the main betting view links that lead to a page that contains information related to the match in question. This information could consist of previous matches of the teams during current season, previous meetings between the teams, league standings and possibly essential injuries, starting lineups, betting tips etc.

6.4 Average Problems and Suggestions of Improvement

9. Currency unit is not shown

Problem:

The currency unit is not shown almost anywhere, especially nowhere in the coupon. This was commented confusing by most of the test users. Showing the euro symbol after the betting amount number could help assure the user that the number is in fact the betting amount. The euro symbol could for example replace the triangle icon after the preset betting amounts. The original preset wager amounts on a coupon are illustrated in Figure 19.

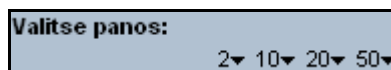


Figure 19: Original preset wager amounts on a coupon.

Suggestion of improvement:

The arrows after the preset wager amounts should be changed to euro symbols. Also, the actual preset wager amounts should probably be the most used wager amounts. For example, 50 euros is probably not the most common wager amount. The new preset wager amounts on a coupon are illustrated in Figure 20.

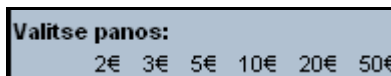


Figure 20: New preset wager amounts on a coupon.

10. Overall impression of the site

Problem:

Test users thought that betting site is ugly and spiritless. It is not very entertaining.

Suggestion of improvement:

The selection of colors and general graphical appearance that is used in the web site should be given some thought. Users may find smoother colors and lines more pleasing. Our expertise is not sufficient to make justifiable suggestions on this area. However, we suggest making the "Betting objects" image on the left look more like a title or removing it completely.

11. Browser compatibility

Problem:

The system doesn't function well with some browsers (i.e. Mozilla and Firefox which do not show letters ä and ö correctly or Opera which cannot show the "Choose game" selection list). It is mentioned in the FAQ that only Internet Explorer and Netscape are supported, but this is still a problem since many people use other browsers and they are probably not willing to install new browsers just to be able to use a certain website.

Suggestion of improvement:

The pages should be compatible with different browsers. Especially Mozilla and Firefox should be able to show letters ä and ö correctly.

12. The window does not scale

Problem:

The window does not scale when stretched. Only the black borders around the window get larger. It is therefore hard to for example enlarge the font size for people with impaired vision. Test users were forced to look very closely occasionally the display to see the text and symbols properly. Being able to stretch the window would also give the user a chance too see more betting items in one screen, which would reduce the need for scrolling the page.

Suggestion of improvement:

The page should be made scalable.

13. Current location is hard to recognize

Problem:

Users are not given enough clues of the current page. Some users lost the track of their position while navigating between the navigation buttons. The original navigation buttons are illustrated in Figure 21.



Figure 21: Original navigation buttons.

Suggestion of improvement:

All pages should have a title that stands out from the background and the button that lead to the page should change so that one can always see which page is selected. For example, the

background of the button could turn to green. Also, the button should not be active on its page. The new navigation buttons are illustrated in Figure 22.



Figure 22: New navigation buttons.

14. Problems with system bets

Problem:

User inputs unnecessarily a wager before pressing button "Use". When using system, the users were very confused what system betting means. Coupon list is way too long and user may be irritated because he or she does not understand what it means. A possibility to make a system bet appears only after choosing enough games to a coupon. User is not aware of that kind of product earlier. The original coupon with two events is illustrated in Figure 23a, the original coupon with five events in Figure 23b and the original coupon with triple system selected in Figure 23c.

Figure 23a: Original coupon with two events.

Kuponki Tyhjennä kaikki

Vetosi:

Hamburger SV - MSV Duisburg	1	1,30	
VfB Stuttgart - Hannover 96	1	1,70	
Dynamo Dresden - Sp Vgg Unterhaching	1	1,85	
Greuther Fürth - FC Saarbrücken	1	1,30	
SC Freiburg - LR Ahlen	1	1,35	
Kerroin		7,17	

Valitse panos:

2▼ 10▼ 20▼ 50▼

Valitse

Järjestelmä

Triplasysteemi

Nelossysteemi

Käytä näitä järjestelmiä

Käytä

Figure 23b: Original coupon with five events.

Kuponki Tyhjennä kaikki

Triplasysteemi

Kuponki 1 Vetosi:

Hamburger SV - MSV Duisburg	1	1,30	
VfB Stuttgart - Hannover 96	1	1,70	
Dynamo Dresden - Sp Vgg Unterhaching	1	1,85	
Kerroin		4,08	

Kuponki 2

Hamburger SV - MSV Duisburg	1	1,30	
VfB Stuttgart - Hannover 96	1	1,70	
Greuther Fürth - FC Saarbrücken	1	1,30	
Kerroin		2,87	

Kuponki 3

Hamburger SV - MSV Duisburg	1	1,30	
VfB Stuttgart - Hannover 96	1	1,70	
SC Freiburg - LR Ahlen			

Figure 23c: Original coupon with triple system selected.

Suggestion of improvement:

In the coupon the "System" selection should be always visible. This way the user knows that it is possible to create system bets in the service without needing to select multiple events to the coupon. The radio button selection should be disabled when there are not enough events selected to the coupon. The choice "No system"/"Ei järjestelmää" should also be added to the selections and it should be the default selected choice. The "System" selection should also be before the "Choose the wager amount" function in the coupon. It is more natural to first consider which kind of system to make and then place the wager amount. When the user selects a triple or quadruple system from the radio button selection the wager amount text field should get a factor (for example 4 X) in front of it. The "Use" button would become unnecessary. After the user had selected the system and the wager amount the next state of the coupon should be the confirmation state. If a system bet was selected, it should be clearly stated in words not by listing all possible combinations in the coupon. All combinations could be available through a separate button. The new coupon with two events is illustrated in Figure 24a, the new coupon with five events in Figure 24b and the new coupon with triple system selected in Figure 24c.

The screenshot shows a betting coupon interface with the following elements:

- Kuponki** (Coupon) header with a "Tyhjennä" (Clear) button.
- Vetosi:** (Your bets) section containing two events:

Boston Ltd - Swindon	1	2,25	
Oldham - Chasetown	1	1,10	
- Kerroin** (Odds) section showing a total of 2,48.
- Järjestelmä:** (System) section with three radio button options:
 - Ei systeemiä (No system)
 - Triplasteemi (Triple system)
 - Nelosteemi (Four system)
- Valitse panos:** (Choose stake) section with buttons for 2€, 3€, 5€, 10€, 20€, and 50€, and a "Valitse" (Choose) button.

Figure 24a: New coupon with two events.

Kuponki		Tyhjennä
Vetosi:		
Boston Utd - Swindon		
1	2,25	🗑️
Oldham - Chasetown		
1	1,10	🗑️
Oxford Utd - Eastbourne		
1	1,22	🗑️
Burton - Peterborough		
1	3,15	🗑️
Woking - Southport		
1	1,70	🗑️
Kerroin	16,16	
Järjestelmä:		
<input type="radio"/>	Ei systeemiä	
<input checked="" type="radio"/>	Triplasysteemi	
<input type="radio"/>	Nelossysteemi	
Valitse panos:		
20€	30€	50€
100€	200€	500€
10 X	<input type="text"/>	Valitse

Figure 24b: New coupon with five events.

Kuponki		Tyhjennä
Triplasysteemi		
Käytössä triplasysteemi. Valituista pelikohteista on luotu kaikki mahdolliset kolmen kohteen yhdistelmät. Näin voitat, kunhan vähintään kolme kohdetta on oikein veikattu. Voitot lasketaan ja kirjataan kullekin riville erikseen.		
Kuponki:		
Boston Utd - Swindon		
1	2,25	
Oldham - Chasetown		
1	1,10	
Oxford Utd - Eastbourne		
1	1,22	
Burton - Peterborough		
1	3,15	
Woking - Southport		
1	1,70	
Kerroin	2,28 - 12,04	
Kokonaispanos:	20,00 €	
Mahdollinen voitto:	4,56 € - 118,64 €	
« Peruuta	Iläytä rivit	Vahvista

You are using the triple system. All possible combinations of three are formed from the chosen objects. You will win if at least one of the combinations realize. Winnings are calculated and paid for each combination separately.

Figure 24c: New coupon with triple system selected.

15. No context related help

Problem:

Users think that instructions of different ways to make a bet were too hard to find. Users do not want to search information from Info section. Instead, the information should be somewhere near different products and odds. That is why some misinterpretations of products can be done.

Suggestion of improvement:

Question mark symbols should be added near all non-self-evident functions as well as near the names of the different gaming products in the main betting view. Placing the cursor on top of the question mark symbol should bring a tooltip that shortly describes the purpose of the function or gaming product and pressing the question mark should lead to instructors that explain the symbol. Figure 25 illustrates the betting view with context related help and question marks.

UEFA Cup						
01.12.2005						
Pelin sulkeutumisaika		Joukkue 1 - Joukkue 2				
19:25		Dinamo Bucarest - CSKA Moskova	2,75	3,15	2,35	
1X2 ?			1	X	2	Lisää
19:25		PFC Levski Sofia - Marseille	1,85	3,35	3,70	8 »
Tulosveto ?	Tulosvedossa voitot, mikäli osaat veikata oikein pelin lopputuloksen.					
19:25			Kotivoitto	Tasapeli	Vierasvoitto	
			1-0 5,90	0-0 8,50	0-1 9,15	
			2-0 7,65	1-1 5,45	0-2 18,00	
			2-1 7,60	2-2 14,00	1-2 12,00	
			3-0 15,00	3-3 80,00	0-3 55,00	
			3-1 15,00	MX 150,00	1-3 35,00	
			3-2 29,00		2-3 46,00	
			4-0 39,00		1-4 140,00	
			4-1 38,00		M2 55,00	
			4-2 75,00			
			5-0 125,00			
			5-1 125,00			
			M1 60,00			
Puoliaika/lopputulos ?						
19:25			Kotivoitto	Tasapeli	Vierasvoitto	
			1/1 2,95	X/1 4,55	2/1 19,00	

Figure 25: Betting view with help

16. Difficult returning to initial state

Problem:

Users have lots of troubles returning back to initial state of the betting site after pressing PAF.fi -logo, Account or Mail box button. Users may think that the PAF.fi-logo acts as web browser's back button, because of its position. This was noticed during the test sessions when two test users pressed and commented the PAF.fi-logo as back button.

Suggestion of improvement:

The PAF button on top left corner should be changed so that one can easily understand where it will lead without actually clicking it. Also, the page "Casino and lotteries" that the PAF button currently leads to, should be changed so that it contains links also to other games that can be found in the "Choose game" menu. This way the user can use that button and page to navigate between all different games.

17. Error messages

Problem:

The font used when reporting an error is too small. Half of the test users didn't notice all error messages. Also, the error messages aren't emphasized enough. In addition to this, some of the error messages aren't clear enough. It took some time for few test users to understand what the messages meant. Error messages should help the user understand what went wrong and possibly give instructions on how to proceed. Also, in "Result Center" no error message at all is shown when one selects some combination from the selection boxes that do not have any results. The original error message on a coupon is illustrated in Figure 26.

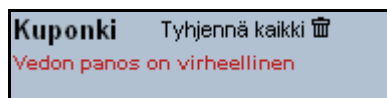


Figure 26: Original error message on a coupon.

Suggestion of improvement:

In general error messages should better describe the problem. For example, "No data found" / "Tietoa ei löytynyt", that occurs when clicking for example the link "One hour to go!", when there are no events within the hour, should be "There are no events within the next hour" / "Seuraavan tunnin sisällä ei ole pelikohteita" and the error message that is given when one leaves the wager amount field empty on a coupon ("Bet amount is invalid" / "Vedon panos virheellinen") should be "Bet amount is missing" / "Vedon panos puuttuu".

On the coupon, the error message "The bet cannot be confirmed" / "Panos on liian suuri. Panoksen pitää olla 2.0 ja 200.0 välillä" should also be shown immediately after the incorrect wager amount has been given, not until after one tries to confirm the bet.

Error messages should also have yellow or red background or red borders around them. The error messages should be placed in the immediate vicinity of the "Choose the wager amount" function. Also, the place where the error occurred should be highlighted. The new error message on a coupon is illustrated in Figure 27.

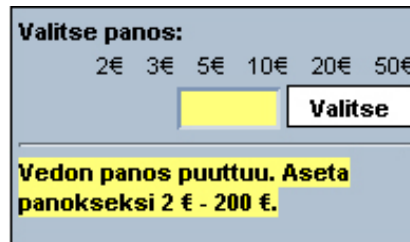


Figure 27: New error message on a coupon.

6.5 Minor Problems and Suggestions of Improvement

18. Searching teams

Problem:

User has no possibility to search from the system if a certain team has a match to bet on. Users wanted to found same function in Result centre also.

Suggestion of improvement:

There should be a quick search text field and button on top left where one could search for all events of a certain team. The new search function is illustrated in Figure 28.

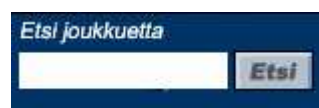


Figure 28: New search function.

19. Unfamiliar league names

Problem:

League names are not names the users expected. Names were not familiar to users. For example Finnish term "Valioliiga" instead of "Premiership" is more familiar.

Suggestion of improvement:

Proper and Finnish league names should be used whenever possible.

20. Closing "Choose game" menu

Problem:

One cannot clear the "Choose game" menu from the screen by clicking somewhere in the main window. It can be cleared only by clicking the "Choose game" button or some link in the menu. This can be very annoying for a user that has become accustomed to windows style menus.

Suggestion of improvement:

The "Choose Game" menu should close when clicking somewhere on the page.

21. Some terms are misleading or hard to understand

Problem:

There were several misleading terms or terms that were hard to understand used throughout the service.

Suggestion of improvement:

We suggest the following changes to the terms used in the site:

- League names should be those that are familiar to user, i.e. Finnish term "Valioliiga" instead of "Premiership".
- In Finnish the term "Tulosveto" should be used everywhere instead of the term "Maalilukuveikkaus".
- The function that is used to close the coupon should be named "Close" / "Sulje" instead of "Clear all" / "Tyhjennä kaikki". If the coupon is always visible, the function should be "Clear" / "Tyhjennä".
- The terms "M1", "MX" and "M2" in correct score gaming product should be "Rest 1" / "Muu 1", "Rest X" / "Muu X", "Rest 2" / "Muu 2".
- In the coupon the term "<<Peruuta" should be "<<Takaisin".
- In the main betting view terms "Team 1" / "Joukkue 1" and "Team 2" / "Joukkue 2", should be "Home team / Kotijoukkue" and "Away team / Vierasjoukkue".
- In Finnish terms "FAQ" and "Info" should be "Kysymykset" and "Ohje".
- In settled bets term "Correct choice" should be "Correct result".
- In Finnish version term "Panos" should be used in open bets instead of term "Summa".

- The term "Exit" / "Lopeta" should be "Logout" / "Kirjaudu ulos".
- "Choose game"/"Valitse peli" term could be changed to "Game menu"/"Pelivalikko" which would better describe its purpose.

6.6 Usability Criteria Realizations

We defined different usability criteria before the tests in chapter 3. Here the realizations of those criteria are considered.

Learnability was studied by measuring how much faster and with how many less errors or deviations from the optimal route a similar task of making a single bet can be accomplished when repeated three times. Results indicate that the second time of making a single bet is approximately 39 % faster than the first time and the third time is approximately 14 % faster than the second time. We expected even more decrease, but the trend is clear. Making the first bet takes significantly more time, because users are at first a bit confused about how to make a bet. This is partly because the odds do not look like hyperlinks. However, after the way to make a bet is discovered, this is no longer a problem. Instead some delays are caused by the difficulty of navigating to the desired event. Navigation problems also cause some deviations from the optimal route as well as minor errors.

Errors were categorized as critical errors and minor errors. Critical errors prohibited the user from finishing the task without correcting them. Minor errors allowed the task to be finished. Compared to the expectations made before the tests, the users made significantly more minor errors that they did not notice, somewhat more minor errors that they noticed and fixed and also a little bit more critical errors. Minor errors were mostly related to navigation problems including the difficult "More" column and current location being hard to recognize.

Some immediately noticed minor errors were also made when the user clicked different odds or other items than he intended to, because the different items were so close to each other. Most of the critical errors were related to the lack of feedback after confirming a bet, which led some users to believe that they had confirmed a bet while in fact they had not.

In addition, the concept of making system bets proved to be too difficult for some users. Users also ended up on an error page approximately as often as expected and required less help from the instructor than expected. Most of the error pages were related to choosing invalid combinations to the coupon as well as choosing combinations of leagues and gaming products that did not have any events in the main betting view. The users needed help from the test instructor in two occasions. Firstly, most of the users did not have the patience to wait for the Result Center page to load. Secondly, some users did not know how to get back to the betting view after accidentally exiting it by for example clicking the PAF.fi logo in the upper left corner.

The satisfaction was measured by asking the users to compare the service to regular sports betting (in a kiosk for example) and to other online sports betting services if the user had any experience on them. The user was also asked how safe and how fast he experienced the system. Compared to the original expectations, the users found the site to be a bit better in comparison to regular sports betting as well as to other online sports betting services. However, the users still felt that this system was a bit more difficult to use, although they agreed that basic bets were very easy to make because very few clickings were needed. The results of how the users felt about the security and fastness of the system were as expected. The system appeared to be fast except for the Result Center and sometimes when confirming a bet. Users did not have a real opinion about the security of the system.

The following Table 3 lists the achieved levels for the usability criteria defined in chapter 3. Numbers are averages from all the test users for example how many errors there was in repeating a similar task is calculated by adding all the errors made in repeating tasks and dividing the number with the number of test participants.

Table 3: Usability Criteria Realizations

Usability Criterion	Measuring Practice	Meter	Estimated Current Level	Highest / Lowest Acceptable Level	Target Level	Best Achievable Level	Achieved Level
Learnability	Repetition usability test task: "you want to make a bet, in which x is the winner of the match x-y" which is repeated three times for different teams	Errors in repeating a similar task	3	2	1	0	2,2
Learnability	Repetition usability test task (see above)	How much faster the task is accomplished the second time	40 %	33 %	50 %	90 %	39 %
Learnability	Repetition usability test task (see above)	How much faster the task is accomplished the third time compared to the second time	15 %	10 %	25 %	80 %	14 %
Learnability	Repetition usability test task (see above)	How many deviations from the optimal route while repeating a similar task	5	3	1	0	4
Errors	All usability test tasks	How many times the user ended up on an error page	3	1	0	0	2,4
Errors	All usability test tasks	How many times the user needed help from the test instructor	5	2	1	0	1
Errors	All usability test tasks	How many times the user made a minor error that he didn't notice	2	0	0	0	4
Errors	All usability test tasks	How many times the user made a minor error that he immediately fixed	4	3	2	1	4,2
Errors	All usability test tasks	How many times the user made a critical error	1	0	0	0	1,4
Satisfaction	Questionnaire	Answer to the question "the system was usable in contrast to making bets in kiosks" on a scale of 1-5	3	4	4	4	3,3
Satisfaction	Questionnaire	Answer to the question "the system was easier to use than other online betting systems" on a scale of 1-5	2	4	5	5	2,7
Satisfaction	Questionnaire	Answer to the question "the system appeared to be secure" on a scale of 1-5	4	3	4	5	4
Satisfaction	Questionnaire	Answer to the question "the system appeared to be fast" on a scale of 1-5	4	4	5	5	4

7 Conclusions

In this chapter conclusions of usability evaluation and testing are described. Some individual things may have affected the results. These and other interesting matters are explained here.

Almost all test users had some technical background, which is why they were better than average computer users. Therefore people with less technical skills may have different kind of problems when using the system. Thus these problems could not be found during tests. Users themselves thought that they were better than normal users so they gave a lot of negative comments about the system.

User interface of the system changed a bit during this research project which caused few troubles when evaluating the system. Fortunately upgrading the system happened after heuristic evaluation so it did not have an impact on results of the test sessions except pilot test. However, some heuristic problems found in the earlier version of the system do not exist anymore in the system but these are still stated in Appendix A.

Heuristic evaluation revealed most of the usability problems. Usability tests with users supported and partly fleshed out those same problems. Informal walkthrough as a usability test method with a user succeeded well also. Sports betting related magazines were great supplementary material because the user examined betting tips carefully for his betting decisions. Cognitive walkthrough as an evaluation method could have suited very well to the examination of the learnability of the system but that method was never user properly due to lack of time and knowledge.

Changing test leader so that everyone of the test team had a chance to lead at least one usability test was an excellent decision, because it made it possible for everyone to practice test leading. Changing leader did not seem to contort results at all.

Wording of Finnish version of test task number 9 where user was asked to find earlier results of matches to get "background information" from Result Center may have been too misleading. Due to the wording of the test task, users expected also verbal background information of matches. This may have led to a too strict proposal of improvement. More usability testing should be done to be absolutely sure that users are unhappy with Result Center.

Usability realization table, proposed in chapter 6.5, does not give much important information to anyone. Users wanted to try out what happens after pressing different links and buttons in the system. So getting familiar with the system caused for example a lot of deviations from optimal route when performing a test task. In addition, thinking aloud, while doing the test tasks, caused errors and more time consumption. It was also difficult to

interpret whether the user made an error or not, because it was not always obvious. Thereby usability criteria realization table should not be reviewed too carefully.

Statements of questionnaire may have been too leading, because critique was announced during test quite a lot but when filling the questionnaire form users were relatively satisfied with the statements. Also, the first question in the interview after doing test tasks should have been other than a general question about the user friendliness of the system. Typical answer was "quite easy" and later this opinion was repeated in other questions and problems were not reflected carefully.

Www-browser used in usability tests did not have the status bar in the foot of the browser. That is why no one could ever see the status of the browser. As a result users did not know that browser was still fetching data from Result Center page. Users saw only a white page and almost always stated that no results can be found on that page. That is why lot of errors were made when trying to use Result Center and this may have caused the disappointment to it.

Results do not explicitly tell problems related to learnability of the system which was the most important research subject of the system. Anyway proposals of improvement were thought carefully from the point of view of new users of the system. That is why proposals of improvement surely enhance usability of the whole system and especially learnability and satisfaction aspects of it.

The test user who evaluated proposals of improvement was already familiar with the system. Consequence of it was that user did not want big changes to the system, because adaptation to changes takes a while. However, being familiar with system was important in order to understand the use and interaction of system, because only paper prototype of proposals of improvement was possible to use.

After all, the test team and the customer of this project are very happy with the outcome of the usability evaluation of On-line Sports Betting pages.

8 References

Piirainen A., E-mail, 3.10.2005.

Nielsen J., Usability Engineering, Academic Press Inc, 1994, 362 s., ISBN 0-12-518406-9.

Riihiaho S., Käytettävyyden arviointi ilman käyttäjiä, Helsinki University of Technology [referenced 30.9.2005]. URL: <http://www.soberit.hut.fi/T-121/T-121.5600/asiantuntija-arviot.pdf>.

Appendix A: Results of the Heuristic Evaluation

The evaluated user interface was the Finnish version. Most of the problems also appear in the English version, but some term related problems are language-specific. In these cases the Finnish terms are used when describing the problem. All problems may not be present in the current PAF on-line sports betting service, since the user interface has been slightly updated since the heuristic evaluation. The problems are categorized based on their significance. Most significant problems are listed first. Also, the heuristic that is violated is mentioned. The used heuristics are Nielsen's ten usability heuristics (Nielsen, 1993), which are described in the following:

1. Aesthetic and minimalist design

Dialogues should not contain information, which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

2. Match between system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

3. Recognition rather than recall

Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

4. Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

5. Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

6. User control and freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

7. Flexibility and efficiency of use

Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

8. Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

9. Error prevention

Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

10. Help and documentation

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

Critical Problems

Critical problems are problems that may in some case prevent the user from using the system.

- There is not enough feedback from confirming the bet. Essentially only the bet id is added to the coupon. (5. Visibility of system status)
- There are hardly any back buttons that one could use to return to the previous state. (6. User control and freedom)
- The font used when reporting a failure is too small. Also, the error reports aren't emphasized enough with i.e. colours. (8. Help users recognize, diagnose, and recover from errors)
- The system doesn't function well with some browsers (i.e. Mozilla and Firefox which do not show letters ä and ö correctly or Opera which cannot show the Choose game selection list). It is mentioned in the FAQ that only Internet Explorer and Netscape are supported, but this is still a problem. (10. Help and documentation)

Major Problems

Major problems are problems that may frustrate the user by adding major difficulties to the system usage.

- The column headers "1", "X", "2" and "More" are too light. (1. Aesthetic and minimalist design)
- The window does not scale when stretched. Only the black borders around the window get larger. It is therefore hard to for example enlarge the font size for people that have an impaired vision. (1. Aesthetic and minimalist design)
- The way the over/under bets are presented (i.e. "Over 2,20 2.5 goals Under 1,60") is not very understandable. (1. Aesthetic and minimalist design)
- The currency unit is not shown almost anywhere, especially nowhere in the coupon. (1. Aesthetic and minimalist design)
- It is not reasonable to require clicking "Details – more" in open bets to get to see the essential information about the bet. All information about all open bets could be

shown in the page at one time. Also, the term "more" ("lisää") is a bit ambiguous. A better term could be "show" ("näytä"). (1. Aesthetic and minimalist design)

- The betting product (i.e. 1x2 or correct score) of a certain bet is not shown in open bets. Only whether it's i.e. a single bet or a double bet is shown. (1. Aesthetic and minimalist design)
- When choosing something from the leagues and products selection boxes, one has to click "Go" in order to actually make the choices happen. One could assume that the page would update immediately after selecting something from the selection boxes as this kind of behaviour is widely used in other systems. (1. Aesthetic and minimalist design)
- The link "Info" is located in the middle where it is hard to find. It should be in the side where it would be easier to find. Usually the link to help information is in the right side. (1. Aesthetic and minimalist design)
- The minimum and maximum wager amounts are not shown in the coupon while the wager amount is expected to be entered. (1. Aesthetic and minimalist design)
- The numbers in the more field (i.e. "8 >>") are not understandable to users. It is not self-explanatory what clicking them will do. (2. Match between system and the real world)
- In Finnish both terms "Maalilukuveikkaus" (i.e. in selection box) and "Tulosveto" (i.e. in viewing single event's all gaming products) are used in the system about the same gaming product. (4. Consistency and standards)
- The function that is used to close the coupon is named unreasonably ("Clear all" / "Tyhjennä kaikki"). Should be "Close" / "Sulje". (6. User control and freedom)
- There is no easy way to get back to the betting view after selecting "Account" or "Mail Box" from the top row. (6. User control and freedom)
- There is no easy way to clear the confirmed bet from the screen (the "Clear All" link disappears). (6. User control and freedom)
- The "Exit" button should be emphasized more. The "Account" button looks almost the same. (6. User control and freedom)
- One cannot clear the "Choose game" selection box from the screen by clicking somewhere in the main window. It can be cleared only by clicking the "Choose game" button or some link in the selection box. (6. User control and freedom)

- In "Result Center" only an empty screen instead of an error message is shown when selecting some combination from the selection boxes that do not have any results. (8. Help users recognize, diagnose, and recover from errors)
- The different odds in 1X2 are quite close to each other. There is a chance that one could mistakenly click the wrong odds. (9. Error prevention)

Minor Problems

Minor problems are problems that add minor difficulties to the system usage.

- "One hour to go!", "Six hour to go!" and "Today's events!" do not look like links but are links. (1. Aesthetic and minimalist design)
- The buttons "Betting", "Result Center", "Open Bets", "Settled Bets" and "Profile" only work when the text on them is clicked, not when clicked elsewhere in the button. Similar problem occurs in the Choose game selection box also. (1. Aesthetic and minimalist design)
- Some links look like buttons (i.e. "Betting", "Result Center" etc. as well as "Info", "Faq" etc.) (1. Aesthetic and minimalist design)
- In the main betting view the third column, that contains the black dot indicating a single-only bet, does not have a title. (1. Aesthetic and minimalist design)
- The odds do not look like one could click them. (1. Aesthetic and minimalist design)
- The gaming products in the selection box do not seem to be in any order. For example alphabetic ordering or ordering by popularity could be used. (1. Aesthetic and minimalist design)
- In the coupon the event is listed in the first row but the betting mark (i.e. 1, X or 2) is in the second row below the event while the natural reading direction would be from left to right. (1. Aesthetic and minimalist design)
- One cannot drag the coupon anywhere. (1. Aesthetic and minimalist design)
- In open bets there is a field for the correct choice, which is unnecessary since when the correct choice becomes available, the bet is no longer listed in open bets but in settled bets. (1. Aesthetic and minimalist design)
- The function of the black dot indicating a single-only bet is not self-explanatory to the user. (1. Aesthetic and minimalist design)
- In gaming product "First team to score" the links for making the bet are terms ("Home team" and "Away team" instead of the actual team names listed above. (1. Aesthetic and minimalist design)

- If one selects a main sport (i.e. "Football") from the "Betting objects" selection on the left and also some leagues from another sport (i.e. "Sweden – HockeyAllsvenskan" and "USA – NHL") the selected leagues from the other sport are not shown in the betting view. (1. Aesthetic and minimalist design)
- In "Result Center" the correct choices and odds are mixed up in the columns. Also some values of the "Correct choice" column have multiple correct choice / odds combinations which are not understandable to the user. (1. Aesthetic and minimalist design)
- While making a bet that consists of multiple correct choice bets the given wager amounts disappear if one chooses to cancel the coupon in the confirmation state. Also, if one adds another event to the coupon after having filled up the wager amounts for the other events, the filled wager amounts disappear. (1. Aesthetic and minimalist design)
- While making a system bet (triple or quadruple) all the generated coupons are shown to the user which is not reasonable since there could be up to 120 coupons. (1. Aesthetic and minimalist design)
- The layout in period betting makes it hard to determine which odds are related to which period results. (1. Aesthetic and minimalist design)
- There is no information in the coupon on which gaming product the bet is about. (1. Aesthetic and minimalist design)
- The terms "M1", "MX" and "M2" in correct score gaming product are not easily understandable. (2. Match between system and the real world)
- In the main betting view the column titles are only visible when the page is scrolled to the top. After scrolling down one has to remember what different columns mean. (3. Recognition rather than recall)
- There is no title in the main betting view about the currently shown gaming product. (3. Recognition rather than recall)
- In the view that shows all gaming products for a single event, neither the sport nor the league of the event is shown. (3. Recognition rather than recall)
- The buttons on top of the page ("Account", "Mail Box", "Info" etc.) have very different functions, although they are grouped together. Some buttons open new windows while others don't. (4. Consistency and standards)
- In the gaming products selection box the different products are listed in a different order than in the main view. (4. Consistency and standards)

- If one selects some odds and the coupon becomes visible, the "Betting objects" selection on the left disappears. (4. Consistency and standards)
- In the coupon the same trash can symbol is used for two different functions (for closing the coupon ("Clear all") and for removing one event ("Trash this")). (4. Consistency and standards)
- Underlined texts are not always links while almost all non-underlined texts are links. Especially the Info and FAQ pages are very different. Info has links on top of the page and bold headings throughout the text while FAQ does not have links and has underlined headings. (4. Consistency and standards)
- The odds are sometimes separated with white lines and sometimes not. (4. Consistency and standards)
- Clicking the links "Close time", "Team 1", "Team 2" in the main betting view appears to have no effect other than refreshing the main view. (5. Visibility of system status)
- In entertainment category clicking either of the links "Close time" or "Event name" results in those links disappearing from the view. (6. User control and freedom)
- The error message "No data found!" / "Tietoa ei löytynyt!", that occurs when clicking for example the link "One hour to go!" when there are no events within the hour, gives too little information. (8. Help users recognize, diagnose, and recover from errors)
- The error message in open bets when there are no open bets ("Järjestelmäviesti: Kuponkia ei löytynyt") is unclear for that situation. (8. Help users recognize, diagnose, and recover from errors)
- The error message that is given when one leaves the wager amount field empty on a coupon ("Bet amount is invalid" / "Vedon panos virheellinen") is too general for that error. A better message would be for example "Bet amount is missing" / "Vedon panos puuttuu". (8. Help users recognize, diagnose, and recover from errors)
- The preset wager amounts are too close to each other in the coupon. (9. Error prevention)
- The error message "The bet cannot be confirmed" / "Panos on liian suuri. Panoksen pitää olla 2.0 ja 200.0 välillä" is shown only after one tries to confirm the bet. It should be shown in the previous screen after the too large wager amount has been given. (9. Error prevention)
- In Finnish version the information on top of the open bets page ("Listatut vedot ovat avoimena. Tarkempaa tietoa löydät kohdasta") is very unclear and appears to end in

the middle of a sentence. A better opening sentence could be for example "Olet jättänyt seuraavat vedot." (10. Help and documentation)

- Info and FAQ offer somewhat similar instructions. The user may not necessarily know which one to use to look for help. (10. Help and documentation)
- The information on top of the page that opens when clicking "more" / "lisää" link of a certain event on open bets page ("Details about selected bet. You can return to list with" / "Lisätietoa valitusta vedosta. Palaa listaan") appears to end in the middle of a sentence or otherwise in a very odd way. (10. Help and documentation)

Cosmetic Problems

Cosmetic problems are problems that do not add any real difficulties to the system usage, but that could be fixed to make the system look and feel better.

- Returning from the view that shows all gaming products of a single event leads to the beginning of the previous page, not to the point where the link that leads to the page was clicked. (1. Aesthetic and minimalist design)
- The main betting view may get very long if there are lots of events. (1. Aesthetic and minimalist design)
- The placing of "Name", "Gaming Account", "Casino" and "Poker" on top of the page is not very systematic (gaps between them vary). (1. Aesthetic and minimalist design)
- There are two ways to select the leagues ("Betting objects" on the left and "Leagues" on top) which may burden the user. (1. Aesthetic and minimalist design)
- The layout and grouping of different buttons and links on top of the page is not very usable. The empty space is not used in the best possible way. (1. Aesthetic and minimalist design)
- The "Go" button on top of the page is aside the "Products" selection box while it also affects the "Leagues" selection box. (1. Aesthetic and minimalist design)
- When one is in some view ("Betting", "Results center", "Open bets" etc.) the link on top of the page that leads to the current page should not act as a link, because there is no function for that link other than refreshing the page. (1. Aesthetic and minimalist design)
- In "Choose game" selection box all lines act as links. One could assume that the bold header lines are only headers not links. (1. Aesthetic and minimalist design)
- The button that represents the current page ("Betting", "Results center", "Open bets" etc.) could be highlighted. (1. Aesthetic and minimalist design)

- Too many different fonts are used in the same page. (1. Aesthetic and minimalist design)
- There is an extra column after the close date in the main betting view. (1. Aesthetic and minimalist design)
- Different leagues in the main betting view are not arranged according to the close time. Perhaps they are arranged by popularity? (1. Aesthetic and minimalist design)
- The events within some league that have the same close time are not arranged in alphabetical order. (1. Aesthetic and minimalist design)
- The arrow that points down after the preset wager amounts in the coupon could be interpreted so that the preset wager amount would be set to the text field below, but instead clicking those leads to the next page. (1. Aesthetic and minimalist design)
- The coupon should be more highlighted by making it for example larger or using different colours. Currently it somewhat fades to the background. (1. Aesthetic and minimalist design)
- The "Bet id." in open bets is quite useless information, but appears first when listing bets in open bets. (1. Aesthetic and minimalist design)
- When betting several correct score events on the same coupon, there are several text fields which are used to set wager amounts for different events. These text fields do not have enough information around them on what one is expected to fill them with. (1. Aesthetic and minimalist design)
- When one clicks the "more" link in the open bets pages the "<< Back" button appears to the top left of the page, which is a somewhat unnatural place, because the "more" link is in the right side. (1. Aesthetic and minimalist design)
- In the coupon the term "<<Peruuta" is not as good as for example "<<Takaisin" would be. (1. Aesthetic and minimalist design)
- In winner bet numbering the different winners seems a bit useless. (1. Aesthetic and minimalist design)
- The main betting view is different (for example some headers are/aren't shown) depending on whether one gets to the betting view using the main selection boxes ("Leagues" & "Products") or by clicking "<<Back" from the view that shows all gaming products for a single event. (1. Aesthetic and minimalist design)
- When one clicks the black dot that represents a single-only event, one jumps to the top of the page. (1. Aesthetic and minimalist design)

- The term "Leagues" does not fully cover the contents of the selection box. For example entertainment events are hardly any league. (2. Match between system and the real world)
- In the main betting view there are terms "Team 1" / "Joukkue 1" and "Team 2" / "Joukkue 2", which are not as clear as "Home team / Kotijoukkue" and "Away team / Vierasjoukkue" would be. (2. Match between system and the real world)
- In betting the total amount of goals the signs ">" and "<" are unnecessary and could be replaced by textual presentation ("Over" and "Under"). (2. Match between system and the real world)
- The period betting markings (i.e. "1/X/1") may not be easily understandable. (2. Match between system and the real world)
- The "Choose game" / "Valitse peli" term does not cover all the contents of the selection box (for example open bets are hardly a game). (2. Match between system and the real world)
- "FAQ" is an English term and may not be clear to the user of the Finnish version of the system. For example "Kysymykset" could be better. (2. Match between system and the real world)
- "Info" is not a very natural Finnish term. For example "Ohje" good be better. (2. Match between system and the real world)
- Finnish term "Maalilukuveikkaus" may not be familiar to the user. "Tulosveto" would probably be more familiar. (2. Match between system and the real world)
- In settled bets the term "Correct choice" is not very good since the result of the match is hardly chosen by anyone. A better term would be i.e. "Correct result" (2. Match between system and the real world)
- The cursor does not change to hand on top of all the buttons. (4. Consistency and standards)
- In Finnish version term "Summa" is used in open bets while in coupon term "Panos" is used for the same thing. "Panos" would seem to be a more logical term so it could be used in open bets also. (4. Consistency and standards)
- In system bets the preset wager amount links have values that are implicitly multiplied with the number of coupons. (4. Consistency and standards)
- There are many different looking buttons grouped together on top of the page. (4. Consistency and standards)

- In the selection box the term "Leagues" / "Liiga" means the same as term "Betting objects" / "Pelikohteet" in the left side (4. Consistency and standards)
- The different sports are not bolded in the "Leagues" selection box while they are bold in the "Betting objects" frame on the left side. This may be a technical restriction. It would make the selection box easier to read. (4. Consistency and standards)
- In Finnish version there are unnecessary decimals in the error message "Panos on liian alhainen. Panoksen pitää olla 2.0 ja 200.0 välillä". (4. Consistency and standards)
- In the main view the date and time are separated into different rows while in the view that lists all gaming products for a single event the date and time are together in the same field. (4. Consistency and standards)
- In gaming product 1X2 there can be bets where one can only choose 1 or 2 and no X (for example betting for first penalty). (4. Consistency and standards)
- The system rounds the wager amounts that the user has given without notifying the user about that. (5. Visibility of system status)
- There is no option to clear all selections at once in the "Betting objects" field on the left. (7. Flexibility and efficiency of use)
- One can put a negative number to the wager amount and the possible win is then also shown as a negative number. (9. Error prevention)
- New opening windows may disturb the user. (10. Help and documentation)

Not Real Usability Problems

Problems that have really nothing to do with the system usability, but that could be fixed just to make the system look more perfect.

- The meaning of the grey circle before the mail box is not clear. Perhaps it will turn green or start flashing when there is new mail? (1. Aesthetic and minimalist design)
- The exclamation marks in the links "One hour to go!", "Six hour to go!" and "Today's events!" are a bit unnecessary. (1. Aesthetic and minimalist design)
- There is an unnecessary picture on top of the "Choose game" menu. (1. Aesthetic and minimalist design)
- The texts "Close time", "Team 1", "Team 2" in the main betting view do not look like links. (1. Aesthetic and minimalist design)

- In Finnish the term "Nro." used in open bets should be "Nro" (without the dot) (1. Aesthetic and minimalist design)
- In Finnish the term "Yksityskohdat" used in open bets is misspelled. (1. Aesthetic and minimalist design)
- In Result Center the "Ok" button is too far from the selection boxes. (1. Aesthetic and minimalist design)
- In the main betting view there is too much space in the close time column after the actual time. (1. Aesthetic and minimalist design)
- Should the term "HockeyAllsvenskan" be only "Allsvenskan"? (2. Match between system and the real world)
- In Finnish version everything else in the main view is in Finnish, but the term "Poker" is in English. Also the currency unit of the poker is dollars instead of euros. (2. Match between system and the real world)
- The Finnish term "maalilukumäärä" is not very good Finnish. A better term would be for example "maalien määrä". (2. Match between system and the real world)
- In settled bets if there is no win a "-" sign is used while a textual representation i.e. "No win" would be more clear. (2. Match between system and the real world)
- The gaming products could be named in a more understandable way. For example "Halftime/Fulltime" / "Puoliaika/Lopputulos" may not be understood correctly. (2. Match between system and the real world)
- The PAF picture on top left corner does not link to the front page of PAF which one would assume. (4. Consistency and standards)
- The picture on the 'television' in the "Choose game" menu appears only in some of the links. (4. Consistency and standards)
- In Finnish the term "Yli/alle 5.5 Maalia" should be "Yli/alle 5,5 maalia" to be consistent. (4. Consistency and standards)
- In open bets the texts that are on the white background are a bit more to the left than the texts that are on the grey background. (4. Consistency and standards)

Appendix B: Tasks for the Test

The different test tasks performed by users in traditional usability tests are listed here both in Finnish in which they were given to the users and in English.

Tehtävät

1. Olet kuullut kaveriltasi, että internetissä on vedonlyöntipalvelu. Olet nyt päättänyt kokeilla palvelua. Ensimmäiseksi haluat ottaa selvää, mitä x-liigan otteluita on tänään tarjolla?
2. Olet vannoutunut x-liigassa pelaavan joukkue y:n fani ja haluat etsiä y:ltä jonkun kohteen, jota voit veikata tänään.
3. X-liigan joukkue y on yleensä ollut vahvoilla joukkue z:aa vastaan, joten päätät tehdä vedon, että y on ottelun y - z voittaja.
4. Nyt haluat tarkistaa, minkälaisen vedon jätit.
5. Olet kuullut, että eri vedonlyöntitapoja on paljon ja nyt sinua kiinnostaa, millä eri tavoilla voit lyödä vetoa x-liigan ottelussa y - z.
6. Mietit, että olisihan se mukava voittaa jotain rahaakin. Tästä syystä päätät tehdä yhden oman mielesi mukaisen hyvän vedon, jolla voit voittaa.
7. Olet huomannut, että x-liigan joukkue y pelaa hyvin joukkue z:aa vastaan ja haluatkin tehdä vedon, että y voittaa z:n 4-2. Asetat panokseksi kolme euroa.
8. X-liigan joukkue y on yleensä pelannut hyvin joukkue z:aa vastaan, joten päätät tehdä vedon, että y on ottelun y - z voittaja.
9. Haluat tehdä yhdelle kupongille vedon peleistä, joissa on vastakkain x-liigan joukkueet y ja z sekä lisäksi u-liigan joukkueet v ja w. Ennen vedon tekemistä haluat katsoa aiempia tuloksia taustatiedon hankkimiseksi.
10. Valitset kupongille neljä eri kohdetta. Haluat parantaa voittomahdollisuuksiasi, joten teet sellaisen vedon, jolla voittaa, vaikka vain kolme kohdetta menisi oikein.
11. Nyt päätät valita kupongille kolme kohdetta. Päätät kuitenkin vaihtaa näistä yhden ennen panoksen asettamista.
12. Seuraavaksi haluat tehdä vedon, että x-liigan joukkue y on ottelun y - z voittaja.
13. Olet varma, että joukkue y ei ainakaan häviä joukkue z:lle x-liigassa. Teetkin yhden vedon, johon pelaat sekä y:n voittoa, että tasapeliä.

14. Olet huomannut, että x-liigan joukkue y pelaa yleensä vahvasti ensimmäisen puoliajan, mutta väsyä toisella. Haluatkin veikata, että joukkue y voittaa ottelun y - z ensimmäisen puoliajan, mutta ottelun voittaa lopulta z.
15. Valitset kuponjille vähintään viisi eri kohdetta. Haluat parantaa voittomahdollisuuksiasi, joten teet sellaisen vedon, jolla voittaa, vaikka vain neljä kohdetta menisi oikein. Perut kuitenkin vedon ennen vahvistamista.
16. Haluat parantaa voittomahdollisuuksiasi x-liigan ottelun y - z lopputuloksen veikkaamisessa ja veikkaatkin yhden vedon, että y voittaa z:n joko 3-0, 3-1, 4-0 tai 4-1. Pidät kuitenkin lopputulosta 4-0 kaikkein todennäköisimpänä.
17. Lopuksi haluat vielä tehdä yhden vedon, että x-liigan ottelussa y - z ottelun ensimmäinen maali syntyy puolen tunnin aikana.

Tasks

1. You have heard from a friend of yours that there is an online sports betting service in the internet. You are interested in using the service. First you want to find out what kind of events there are today for a league x.
2. You are a great team y of league x fan and you want to find an event from y which you can bet today.
3. Team y of league x has usually played very well against team z, so you want to make a bet in which y is the winner of match y – z.
4. Now you want to check out what kind of bet you made.
5. You have heard that there are lots of ways to bet in this system and you are interested in what kinds of ways to bet there exist in game y – z of league x.
6. Now you want to win some money and you want to make a bet, which can win.
7. You have noticed that team y of league x plays well against team z and you want to make a bet, in which y wins z 4-2. You place 3 euros for the betting amount.
8. Team y of league x has usually played very well against team z, so you want to make a bet in which y is the winner of match y – z.
9. You want to make a bet on one coupon from games y – z of league x and v – w of league u. Before making a bet you want to check former results.
10. You choose four events to the coupon. You want to enhance your winning chances, so you make a bet that wins even if only three events end up correctly.
11. Now you decide to choose three events to the coupon. However, you decide to change one of them before placing the betting amount.
12. Next you want to make a bet in which y is the winner of match y – z of league x.
13. You are sure that team y of league x doesn't lose to team z. So, you make one bet in which you play both y's win and draw.
14. You have noticed that team y of league x usually plays a strong first half, but gets tired in the second half. So, you want to make a bet that team y wins the first half of match y – z, but eventually team z wins the match.
15. You choose at least five events to the coupon. You want to enhance your winning chances, so you make a bet that wins even if only four events end up correctly. However, you cancel the bet before confirming it.

16. You want to enhance your winning chances in betting the correct score of match $y - z$ of league x . So, you make one bet that y wins z either 3-0, 3-1, 4-0 or 4-1. However, you think that 4-0 is the most probable result.
17. Finally you want to make a bet that the first goal of the match $y - z$ occurs during the first half hour of the match.

Appendix C: Questionnaire

The questionnaire that was provided to each test user after the user tests is presented here both in Finnish in which it was given to the users and in English.

Kyselylomake

Ikä: ____ vuotta

Seuraavassa on joitakin väittämiä, jotka koskevat järjestelmän helppokäyttöisyyttä. Kunkin väittämän yhteydessä on annettu viisi vastausvaihtoehtoa: 1 = täysin eri mieltä, 2 = osittain eri mieltä, 3 = en osaa sanoa, 4 = osittain samaa mieltä, 5 = täysin samaa mieltä.

Ympyröi kunkin väittämän yhteydessä mielestäsi sopivin vastausvaihtoehto. Voit kirjoittaa kysymyksen viereen tarkennuksen vastaukseesi.

Väittämä	täysin eri mieltä	osittain eri mieltä	en osaa sanoa	osittain samaa mieltä	täysin samaa mieltä
Sivustolta löytyi helposti se, mitä olin etsimässä.	1	2	3	4	5
Sivustolla esiintyneet termit olivat helposti ymmärrettävissä.	1	2	3	4	5
Kokonaisuudessaan vetoja oli helppo muodostaa.	1	2	3	4	5
Vedonlyönnin kohteet ja niiden kertoimet oli merkitty selvästi.	1	2	3	4	5
Fonttikoko oli sopiva koko sivustolla.	1	2	3	4	5
Avoimista vedoista näki selvästi, mitä vetoja olin tehnyt.	1	2	3	4	5
Sivun yläosan valintalaatikoista oli helppo valita pelattavat kohteet ja vetomuodot.	1	2	3	4	5
Navigointi sivuston eri osien välillä oli helppoa.	1	2	3	4	5

Sivustolla ei ollut mitään epäselvää.	1	2	3	4	5
Sivustolla oli sopivasti ohjeita vetojen tekemiseen.	1	2	3	4	5
Järjestelmä oli hyvin käyttökelpoinen suhteessa vetojen jättämiseen esimerkiksi kioskillä.	1	2	3	4	5
Järjestelmää oli helpompi käyttää kuin muita vastaavia online-vedonlyöntijärjestelmiä.	1	2	3	4	5
Järjestelmän tuntui turvalliselta käyttää.	1	2	3	4	5
Järjestelmä tuntui nopealta.	1	2	3	4	5

Questionnaire

Age: ___ years

Following statements consider system's user friendliness. There are five possible answers: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, 5 = strongly agree.

Circle the number which corresponds to the measure of your agreement or disagreement with the statement. You can write corrective to view next to statement.

Statement	strongly disagree	disagree	undecided	agree	strongly agree
I found easily what I was looking for on the site.	1	2	3	4	5
Terms on the site were understandable.	1	2	3	4	5
It was easy to make bets.	1	2	3	4	5
Betting matches and odds were marked clearly.	1	2	3	4	5
Font size was proper everywhere on the site.	1	2	3	4	5
Pending bets were so clear that I found out what bet I had done.	1	2	3	4	5
It was easy to choose leagues and products with selection boxes from upper part of the site.	1	2	3	4	5
Navigation between different parts of the site was easy.	1	2	3	4	5
There was nothing unclear on the site.	1	2	3	4	5
There were proper instructions to make bets on the site.	1	2	3	4	5

The system was usable in contrast to making bets in kiosks.	1	2	3	4	5
The system was easier to use than other online betting systems.	1	2	3	4	5
The system appeared to be secure.	1	2	3	4	5
The system appeared to be fast.	1	2	3	4	5

Appendix D: Questionnaire Results

In the end of the test session users were provided a questionnaire with 14 different statements.

As a summary, betting site looks a bit ambiguous. Users have to spend some time learning to use the site before making any bets. It took awhile to realize how to use the system. Users think it was a bit difficult to perceive which odds related to certain match. Some parts of the betting site looked too tangled. Everything looks very similar and users had troubles noticing the most important things in the middle of large grey lists. System bets were quite hard to understand. Especially huge list of coupons was difficult to understand.

Users expected context related help about products. Some terms of products were not familiar to users. Users admitted that there is help, but help is too hard to find. Also context related links to information about earlier results of games were wanted by users. Team names could be links.

Users did not find immediately what they were looking for, but after becoming more familiar with the system they found it easily. More background information for example about earlier games should be found or users prefer searching it elsewhere. Users prefer link list rather than option menu when selecting leagues.

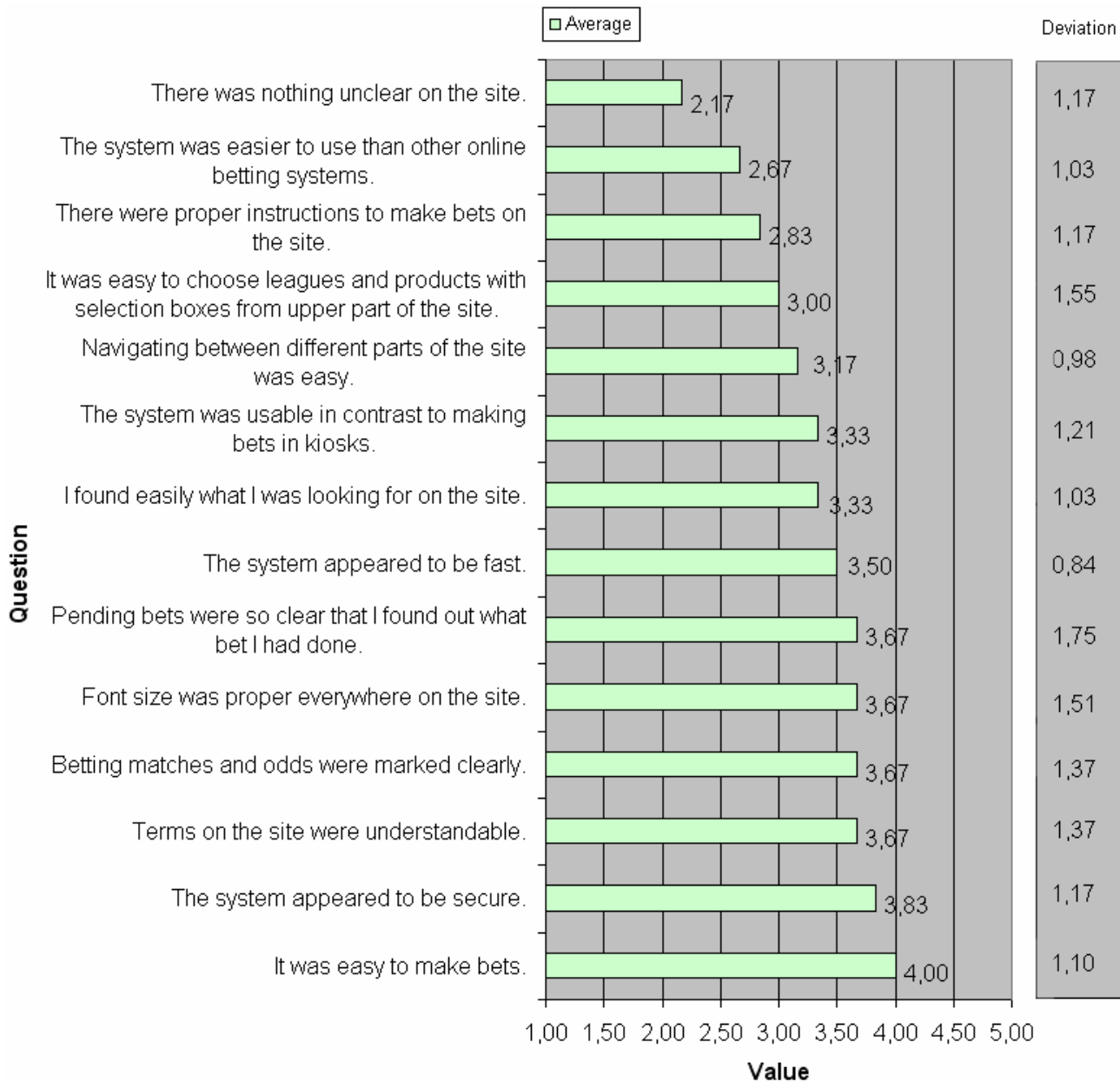
The system appeared to be fast except Result Center and sometimes confirming a bet took awhile. Some users thought no details were available after pressing button "Details" when no checkboxes were chosen. Users did not have a real opinion about the security of the system.

Users who were familiar with some other betting services felt this system more difficult to use. Nevertheless, users said that basic bets are very easy to make because very few clickings are needed.

Statements are sorted from original questionnaire so that first statements here are most disagreed by users.

Answer scale:

1. Strongly disagree
2. Disagree
3. Undecided
4. Agree
5. Strongly agree



Appendix E: Summary of Essential Usability Problems

The following table summarizes the essential usability problems and suggestions of their improvement. Problems are categorized to major, average and minor problems. Problems were found by heuristic evaluation, during user tests or both. Column "Realizing" is an assumption of the difficulty level of realizing the suggested improvement.

Problem	Description	Suggestion of improvement	Priority	Found	Realizing
1. League/product navigation	Navigation could be simpler. League option menu is unnecessary.	Navigation would be easier if "Leagues" option menu were removed.	Major	Both	Easy
2. Layout is not consistent	Layout of column and row structure should be consistent. Three different layouts for same thing recognized.	Layout of main betting view should be consistent and clearer.	Major	Heuristic	Average
3. Feedback after confirming bet	Not enough feedback is provided after confirming a bet.	Confirmation of the bet should be clearer.	Major	Both	Easy
4. Column "More" is confusing	Column "More" is not clear. Title should be changed.	Column titles should be added and especially column "More" changed.	Major	Both	Easy
5. How to make a bet?	Odds should look like hyperlinks. New users do not immediately know how to make a bet.	More interaction visibility should be added while hovering on hyperlinks.	Major	User test	Easy
6. Critical items too close to each other	Different odds and other hyperlinks should be more far away from each other.	Some gap must be added between different hyperlinks, for example between odds.	Major	Both	Easy
7. Details not available easily	Details of Open and Settled bets are interesting but they are too hard to find.	Open and settled bets should be combined and all details should be visible at once.	Major	Both	Average

8. Extremely slow and useless "Result Center"	Result Center is useless and too slow.	Result Center should be removed and replaced with different kind of information that users are actually interested in.	Major	Both	Average
9. Currency unit not shown	Currency unit must be shown when money related critical actions will be done.	Euro symbol should be added.	Average	Heuristic	Easy
10. Overall impression of the site	Impression of the site should be enhanced. Site looks spiritless.	Layout of the main betting view should be clearer and smoother.	Average	User test	Average
11. Browser compatibility	Browser compatibility must be checked. Widely used browsers show wrong characters in certain part of betting site.	Site should support different browsers better.	Average	Heuristic	Average
12. The window does not scale	Users want to control browser size. Betting window should be scalable.	The main window should be scalable.	Average	Both	Average / hard
13. Current location is hard to recognize	Users have very poor clue what is his or her current location on the betting site.	The current location should be emphasized.	Average	User test	Easy
14. Problems with system bets	Users have troubles with confusing system bets.	Making system bets should be enhanced thoroughly so that user knows that kind of bet is available.	Average	User test	Average
15. No context related help	Context related link to help and instructions are needed while betting. Users are not willing to find help elsewhere. Otherwise misinterpretations may be done and users are not happy.	Help should be context related.	Average	Both	Easy

16. Difficult returning to initial state	It is too difficult to return back to betting site if user gets out of it for example in Casino.	Navigation between different game types should be clearer.	Average	Both	Easy
17. Error messages	Font size of error messages should be bigger and messages should be more emphasized and clearer. Some error messages must be added.	Error messages should be improved so that they describe the problem better.	Average	Heuristic	Easy
18. Searching teams	Users are willing to search if certain team has a match to bet on.	A search function should be added.	Minor	User test	Average
19. Unfamiliar league names	League names are not familiar. For example, Finnish "Valioliiga" instead of "Premiership" is more familiar.	Familiar league names should be used.	Minor	User test	Easy
20. Closing "Choose game" menu	There should be possibility to close "Choose game" by clicking every where on the betting site.	The "Choose game" menu should close when clicking somewhere on the page.	Minor	Heuristic	Easy / Average
21. Some terms are misleading or hard to understand	Correct and familiar terms might help users to feel more comfortable with betting site.	Some terms should be corrected.	Minor	Both	Easy

Appendix F: Evaluation of the Suggestions of Improvement

We evaluated our suggestions of improvement with a user by asking him to compare pictures of the current user interface and our improved user interface according to some relevant criteria based on the user interface function in question. Which one of the two pictures or series of pictures was the original and which our suggestion was not revealed to the user and the placing of the pictures was varied so that the original and our suggestion weren't always in the same place. However, because the user was familiar with the current service, he could easily see which of the pictures was from the original site. This may have had an effect on the evaluation, but it also enabled the user to concentrate on the detailed differences between the original solution and our suggestion. User's comments are presented after each test scenario or picture. As a summary, the user found most of our suggestions of improvement better than the original solutions

1. **You are about to place a bet. Selecting the desired betting mark for a certain event is accomplished by clicking the odds. In which picture the odds that the cursor is on top of, attracts you more to click it and gives you a more secure feeling that you are really clicking the odds that you are intending to click?**

Alternative 1:

19:55	Nybro Vikings IF - Halmstad HC	1,28	6,25	6,00	
19:55	Skellefteå AIK - IF Sundsvall	1,15	8,50	8,00	
19:55	Västerås HK - Arboga IK	1,95	6,00	5,75	

USA - NHL

13.11.2005



Alternative 2:

21:55		AS Monaco - Hamburger SV	2,05	3,20	3,25	8 »
21:55		Guimaraes - Bolton	2,10	3,15	2,40	8 »
22:10		Espanyol - Palermo	1,95	3,15	3,60	

Royal League

24.11.2005

User's comments:

Alternative 1 (our suggestion of improvement) looks better, because one can be sure where the mouse cursor points to. Bolding as an emphasis is enough. It is not necessary to i.e. change the color of the cell.

2. You have now selected the items that you want to the coupon. Next you want to set the wager amount for the bet. In which coupon the selection of the betting amount seems more understandable?

Alternative 1:

Kuponki		Tyhjennä
Vetosi:		
Boston Utd - Swindon		
1	2,25	
Oldham - Chasetown		
1	1,10	
Kerroin	2,48	
Järjestelmä:		
<input type="checkbox"/>	Ei systeemiä	
<input type="checkbox"/>	Triplasysteemi	
<input type="checkbox"/>	Nelossysteemi	
Valitse panos:		
2€	3€	5€ 10€ 20€ 50€
<input type="text"/>	Valitse	

Alternative 2:


Kuponki		Tyhjennä kaikki
Vetosi:		
AS Monaco - Hamburger SV		
1	2,05	
Guimaraes - Bolton		
1	2,65	
Kerroin	5,43	
Valitse panos:		
2▼	10▼	20▼ 50▼
<input type="text"/>	Valitse	

User's comments:

In general alternative 2 (original coupon) looks better and understandable, since alternative 1 (our suggestion of improvement) has more information (system selection) . When only the wager amount selection is compared, alternative 1 (our suggestion of improvement) is a bit better since the euro symbol clarifies what the numbers mean. However, the user knows the meaning of the numbers anyway, because it says "Valitse panos" / "Choose wager".






3. You didn't choose a wager amount by mistake and now the system is giving you an error message about that. Which coupon's error message seems better to you?

Alternative 1:

Kuponki Tyhjennä kaikki 

Vedon panos on virheellinen

Vetosi:

FC Schalke 04 - Werder Bremen	1	2,05	
VfL Wolfsburg - Arminia Bielefeld	1	1,65	
MSV Duisburg - FC Köln	1	2,40	
FC Nürnberg - Borussia Dortmund	1	2,85	
Bayern München - FSV Mainz 05	1	1,20	
Kerroin		27,76	

Valitse panos:

2▼ 10▼ 20▼ 50▼

Valitse

Järjestelmä

Triplasysteemi

Nelossysteemi

Käytä näitä järjestelmiä






Käytä

Alternative 2:

Kuponki Tyhjennä

Vedon panos puuttuu. Aseta panokseksi 2 € - 200 €.

Vetosi:

Boston Utd - Swindon	1	2,25	
Oldham - Chasetown	1	1,10	
Oxford Utd - Eastbourne	1	1,22	
Burton - Peterborough	1	3,15	
Woking - Southport	1	1,70	
Kerroin		16,16	

Järjestelmä:

Ei systeemiä

Triplasysteemi

Nelossysteemi

Valitse panos:

2€ 3€ 5€ 10€ 20€ 50€

Valitse

User's comments:

Alternative 2 (our suggestion of improvement) is clearer. User can see the feedback text faster. Yellow color is not too bright. Anyway, error message could be near the place where the mistake occurred.

4. Now you have managed to place a bet and the system tells you about that. In your opinion which one of the two coupons gives you a more secure feeling that the bet has been confirmed?

Alternative 1:

Kuponki		Tulosta veto
Veto on vahvistettu ja löytyy avoimista vedoista		
Veto:		
Barcelona - Racing Santander	1	1,13
Osasuna - Alavés	1	1,60
Real Betis - Cádiz	1	1,70
Valencia - Celta Vigo	1	1,62
Getafe - Málaga	1	1,95
Kerroin		9,70
Panos:		2,00
Mahdollinen voitto:		19,42
Vedon nro.: 1151373		

Alternative 2:

Kuponki		Tulosta / Tyhjennä
Vetosi on vahvistettu.		
Vetosi:		
Boston Utd - Swindon	1	2,25
Oldham - Chasetown	1	1,10
Oxford Utd - Eastbourne	1	1,22
Burton - Peterborough	1	3,15
Woking - Southport	1	1,70
Kerroin		16,16
Panos:		2,00 €
Mahdollinen voitto:		32,34 €

User's comments:

Feedback of alternative 2 (our suggestion of improvement) is more obvious because it is more visible.

5. Now you are about to place a system bet (triple system). In the following two alternatives for accomplishing this are presented as series of multiple coupons. Which one of these alternatives seems better regarding the finding, understanding and placing of the system bet?

Alternative 1:

Alternative 2:

Coupon 1 (two events selected): Coupon 1 (two events selected):

Kuponki		Tyhjennä
Vetosi:		
Boston Utd - Swindon		
1	2,25	
Oldham - Chasetown		
1	1,10	
Kerroin	2,48	
Järjestelmä:		
<input type="radio"/>	Ei systeemiä	
<input type="radio"/>	Triplasysteemi	
<input type="radio"/>	Nelossysteemi	
Valitse panos:		
2€	3€	5€
10€	20€	50€
<input type="text"/>	Valitse	

Kuponki		Tyhjennä kaikki
Vetosi:		
Real Betis - Cádiz		
1	1,70	
Barcelona - Racing Santander		
1	1,13	
Kerroin	1,92	
Valitse panos:		
2	10	20
50		
<input type="text"/>	Valitse	

Coupon 2 (five events selected): Coupon 2 (five events selected):

Kuponki	Tyhjennä
Vetosi:	
Boston Ltd - Swindon 1	2,25
Oldham - Chasetown 1	1,10
Oxford Ltd - Eastbourne 1	1,22
Burton - Peterborough 1	3,15
Woking - Southport 1	1,70
Kerroin	16,16
Järjestelmä:	
<input type="radio"/> Ei systeemiä	
<input checked="" type="radio"/> Triplasyteemi	
<input type="radio"/> Nelossysteemi	
Valitse panos:	
20€ 30€ 50€ 100€ 200€ 500€	
10 X <input type="text"/>	Valitse

Kuponki	Tyhjennä kaikki
Vetosi:	
Real Betis - Cádiz 1	1,70
Barcelona - Racing Santander 1	1,13
Valencia - Celta Vigo 1	1,62
Osasuna - Alavés 1	1,60
Getafe - Málaga 1	1,95
Kerroin	9,70
Valitse panos:	
2▼ 10▼ 20▼ 50▼	<input type="text"/> Valitse
Järjestelmä	
<input checked="" type="radio"/> Triplasyteemi	
<input type="radio"/> Nelossysteemi	
Käytä näitä järjestelmiä	
	Käytä

User's comments:

Alternative 1 (our suggestion of improvement) is better, because the user does not have a possibility to input the wager amount for nothing. Also, the user can see from the radiobutton clearer if he is not using a system bet.

Coupon 3 (triple system selected Coupon 3 (triple system selected):
and wager amount placed):

Kuponki	Tyhjennä
Triplasysteemi	
Käytössä triplasysteemi. Valituista pelikohteista on luotu kaikki mahdolliset kolmen kohteen yhdistelmät. Näin voitat, kunhan vähintään kolme kohdetta on oikein veikkattu. Voitot lasketaan ja kirjataan kullekin riville erikseen.	
Kuponki:	
Boston Ltd - Swindon	
1	2,25
Oldham - Chasetown	
1	1,10
Oxford Ltd - Eastbourne	
1	1,22
Burton - Peterborough	
1	3,15
Woking - Southport	
1	1,70
Kerroin	2,28 - 12,04
Kokonaispanos:	20,00 €
Mahdollinen voitto:	4,56 € - 118,64 €
« Peruuta	 Näytä rivit
 Valvista	

Kuponki	Tyhjennä kaikki
Triplasysteemi	
Kuponki 1	Vetosi:
Real Betis - Cádiz	
1	1,70
Barcelona - Racing Santander	
1	1,13
Valencia - Celta Vigo	
1	1,62
Kerroin	3,11
Kuponki 2	
Real Betis - Cádiz	
1	1,70
Barcelona - Racing Santander	
1	1,13
Osasuna - Alavés	
1	1,60
Kerroin	3,07
Kuponki 3	
Real Betis - Cádiz	
1	1,70
Barcelona - Racing Santander	
1	1,13
Getafe - Málaga	
1	1,95
Kerroin	3,74

Kuponki 10	
Valencia - Celta Vigo	
1	1,62
Osasuna - Alavés	
1	1,60
Getafe - Málaga	
1	1,95
Kerroin	5,05
Valitse panos:	
20▼ 100▼ 200▼ 500▼	
10 X <input type="text"/>	
Valitse	
Järjestelmä	
Käytä alkup.	

User's comments:

Alternative 1 (our suggestion of improvement) is more usable, since if there are many coupons, the user is not always willing to see them all.

Coupon 4 (chosen "Näytä rivit" / Coupon 4 (bet amount selected):
 "Show rows" from the previous state (optional function)):

Kuponki		Tyhjennä
Triplasysteemi		
Seuraavassa on listattu kaikki triplasysteemin rivit. Voitot lasketaan ja kirjataan kullekin riville erikseen.		
Rivi 1		
Boston Utd - Swindon	1	2,25
Oldham - Chasetown	1	1,10
Oxford Utd - Eastbourne	1	1,22
Kerroin		3,01
Rivi 2		
Boston Utd - Swindon	1	2,25
Oldham - Chasetown	1	1,10
Burton - Peterborough	1	3,15
Kerroin		7,79
Rivi 3		
Boston Utd - Swindon	1	2,25
Oldham - Chasetown	1	1,10
Woking - Southport	1	1,70

Rivi 10		
Oxford Utd - Eastbourne	1	1,22
Burton - Peterborough	1	3,15
Woking - Southport	1	1,70
Kerroin		6,53
<input type="button" value="« Takaisin"/>		

Kuponki		Tyhjennä kaikki
Triplasysteemi		
Kuponki 1		Vetosi:
Real Betis - Cádiz	1	1,70
Barcelona - Racing Santander	1	1,13
Valencia - Celta Vigo	1	1,62
Kerroin		3,11
Kuponki 2		2,0
Real Betis - Cádiz	1	1,70
Barcelona - Racing Santander	1	1,13
Osasuna - Alavés	1	1,60
Kerroin		3,07
Kuponki 3		2,0
Real Betis - Cádiz	1	1,70
Barcelona - Racing Santander	1	1,13
Getafe - Málaga	1	1,95
Kerroin		3,74

Kuponki 10		2,0
Valencia - Celta Vigo	1	1,62
Osasuna - Alavés	1	1,60
Getafe - Málaga	1	1,95
Kerroin		5,05
		2,0
Kokonaispanos:		20,00
Mahdollinen voitto:		5,86 - 10,18
<input type="button" value="« Peruta"/>		<input type="button" value="Vahvista"/>
Järjestelmä		
<input type="button" value="Käytä alkup."/>		

User's comments:

Alternative 1 (our suggestion of improvement) is clearer. It is good that the user can see all the coupons if he wants to do so.

Coupon 5 ("Takaisin" / "Back" chosen from the previous state and confirmed the bet):

Kuponki	Tulosta / Tyhjennä
Triplasyteemivetosi on vahvistettu.	
Kuponki:	
Boston Utd - Swindon	2,25
1	
Oldham - Chasetown	1,10
1	
Oxford Utd - Eastbourne	1,22
1	
Burton - Peterborough	3,15
1	
Woking - Southport	1,70
1	
Kerroin	2,28 - 12,04
Kokonaispanos:	20,00 €
Mahdollinen voitto:	4,56 € - 118,64 €

Coupon 5 (confirmed the bet):

Kuponki	Tulosta veto
Veto on vahvistettu ja löytyy avoimista vedoista	
Triplasyteemi	
Kuponki 1	
Real Betis - Cádiz	1,70
1	
Barcelona - Racing Santander	1,13
1	
Valencia - Celta Vigo	1,62
1	
Kerroin	3,11
Kuponki 2	2,0
Real Betis - Cádiz	1,70
1	
Barcelona - Racing Santander	1,13
1	
Osasuna - Alavés	1,60
1	
Kerroin	3,07
Kuponki 3	2,0
Real Betis - Cádiz	1,70
1	
Barcelona - Racing Santander	1,13
1	
Getafe - Málaga	1,95
1	
Kerroin	3,74

Kuponki 10	2,0
Valencia - Celta Vigo	1,62
1	
Osasuna - Alavés	1,60
1	
Getafe - Málaga	1,95
1	
Kerroin	5,05
	2,0
Kokonaispanos:	20,00
Mahdollinen voitto:	5,86 - 80,18
Vedon nro.:	1151755

User's comments:

Alternative 1 (our suggestion of improvement) is better, because the feedback after confirming a bet is more visible.

6. Now you want to find a page that has all possible gaming products, like 1X2 or correct score, which are available for a certain event. From which one of the two pictures you can more easily find a link that leads to this kind of page and what additional information the link possibly provides?

Alternative 1:

PAF SPECIAL

Erikoisveto

13.11.2005

- PELITUOTTEET -

Pelin sulkeutumisaika		Joukkue 1 - Joukkue 2	1	X	2	Muut
18:25	•	Ensimmäinen rangaistus? Suomi - Ruotsi	1,95		1,95	

JALKAPALLO

Brasilia - Serie A

13.11.2005

19:55		Goiás - Atlético Paranaense	1,75	3,40	4,10	8 kpl
19:55		Coritiba - Corinthians	3,40	3,30	1,95	8 kpl
19:55		Ponte Preta - Flamengo	2,00	3,30	3,25	8 kpl
22:05		Cruzeiro - Brasiliense	1,40	4,25	6,25	8 kpl
22:05		Juventude - São Caetano	1,90	3,30	3,55	8 kpl
22:05		Santos - Internacional	3,00	3,20	2,15	8 kpl
22:05		Vasco da Gama - Fluminense	2,65	3,25	2,35	8 kpl

Alternative 2:

PAF SPECIAL

Erikoisveto

24.11.2005

Pelin sulkeutumisaika		Joukkue 1 - Joukkue 2	1	X	2	Lisää
19:55	•	Halmstads BK - Sampdoria		Tasotusveto		2 »

JALKAPALLO

UEFA Cup

24.11.2005

19:25		Zenit St Petersburg - Sevilla	2,45	3,10	2,65	3 »
19:25		AZ Alkmaar - Middlesbrough	2,10	3,25	3,10	3 »
19:55		Hertha BSC - RC Lens	1,70	3,35	4,50	8 »
19:55		Halmstads BK - Sampdoria	6,00	3,60	1,50	8 »
20:40		Dnipro - PFC Litex Lovech	1,75	3,30	4,25	
20:55		Tromsø - Crvena Zvezda	2,50	3,25	2,50	3 »
21:40		Marseille - Heerenveen	1,40	3,80	7,50	8 »
21:55		Roma - Strasbourg	1,40	3,80	7,50	3 »
21:55		AS Monaco - Hamburger SV	2,05	3,20	3,25	8 »
21:55		Guimaraes - Bolton	2,65	3,15	2,40	8 »
22:10		Espanyol - Palermo	1,95	3,15	3,60	

User's comments:

Alternative 2 (original system) was easier to understand, because it is familiar to the user. Anyway, at first it was hard for the user to understand what the arrows and number mean. After the user had learned how to use the system, the meaning was clear. Still it would be nice to see what betting products really are available, not only the count of products.

7. In the following two alternatives for checking one's open and settled bets are presented. In one of the alternatives the functionality is divided into multiple pages and in the other one all functionality is in one page. From which one of the alternatives could you more easily find some bet that you have made?

Alternative 1:

Page 1 (one gets to this page by selecting "Open bets" from the top of the page):

Avoimet vedot:

Vedon nro.	Vedon vahvistamisaika	Pelituote	Summa	Kokonaiskerroin	Mahdollinen voitto	Yksityiskohdat
1151373	24.11.2005 19:12	1X2	2,00	9,70	19,42	Lisää <input type="checkbox"/>

Page 2 (one gets to this page by selecting "Kaikki yksityiskohdat" / "All details" from the above):

Avoimet vedot :

Vedon nro.	Vedon vahvistamisaika	Pelituote	Summa	Kokonaiskerroin	Mahdollinen voitto
1151373	24.11.2005 19:12	1X2	2,00	9,70	19,42
	Vedon alkamisaika	Tapahtuma	Valinta	Kerroin	Oikea valinta
	26.11.2005 23:00	Valencia - Celta Vigo	1	1,62	
	27.11.2005 18:00	Osasuna - Alavés	1	1,60	
	27.11.2005 18:00	Real Betis - Cádiz	1	1,70	
	27.11.2005 18:00	Getafe - Málaga	1	1,95	
	27.11.2005 22:00	Barcelona - Racing Santander	1	1,13	

Page 3 (one gets to this page by selecting "Settled bets" from the top of the page):

Pelihistoria:

! 3 4 Seuraava»

Vedon nro.	Vedon vahvistamisaika	Pelituote	Summa	Kokonaiskerroin	Voitto	Yksityiskohdat
1119736	20.11.2005 15:27	1X2	2,00	1,00	2,00	★ Lisää <input type="checkbox"/>
078960	14.11.2005 14:50	1X2 (Triplasysteemi)	8,00	7,45 - 17,80	-	Lisää <input type="checkbox"/>
1078600	14.11.2005 14:08	1X2	2,00	2,30	-	Lisää <input type="checkbox"/>
081527	15.11.2005 09:33	1X2	2,00	16,16	-	Lisää <input type="checkbox"/>
1058132	10.11.2005 11:39	1X2	2,00	2,65	-	Lisää <input type="checkbox"/>
058232	10.11.2005 12:01	1X2	2,00	2,40	-	Lisää <input type="checkbox"/>
1017545	03.11.2005 13:27	1X2	5,00	1,95	-	Lisää <input type="checkbox"/>
017461	03.11.2005 13:13	1X2	4,00	2,55	10,20	★ Lisää <input type="checkbox"/>
1017502	03.11.2005 13:20	1X2	3,00	4,23	12,69	★ Lisää <input type="checkbox"/>
017447	03.11.2005 13:12	Maalikuveikkaus	3,00	16,00	-	Lisää <input type="checkbox"/>

Yksityiskohdat

Kaikki yksityiskohdat

Valitse kaikki

Page 4 (one gets to this page by selecting "Kaikki yksityiskohdat" / "All details" from the above):

Pelihistoria :

Vedon nro.	Vedon vahvistamisaika	Pelituote	Summa	Kokonaiskerroin	Voitto
1119736	20.11.2005 15:27	1X2	2,00	1,00	2,00 ★
	Vedon alkamisaika	Tapahtuma	Vaininta	Kerroin	Oikea vaininta
	21.11.2005 22:00	Birmingham - Bolton	2	2,55	(palsutettu)

Vedon nro.	Vedon vahvistamisaika	Pelituote	Summa	Kokonaiskerroin	Voitto
1078960	14.11.2005 14:50	1X2 (Triplasysteemi)	8,00	7,45 - 17,80	-
	Vedon alkamisaika	Tapahtuma	Vaininta	Kerroin	Oikea vaininta
	17.11.2005 18:30	1	2,00	7,45	0,00
	17.11.2005 18:30	Lukko - Åssät	1	1,80	2
	17.11.2005 18:30	Ives - Tappara	2	1,80	1
	17.11.2005 18:30	HFK - Jokerit	2	2,30	1
	17.11.2005 18:30	2	2,00	17,80	0,00
	17.11.2005 18:30	Pelicans - SaiPa	X	4,30	1
	17.11.2005 18:30	Ives - Tappara	2	1,80	1
	17.11.2005 18:30	HFK - Jokerit	2	2,30	1
	17.11.2005 18:30	3	2,00	17,80	0,00
	17.11.2005 18:30	Lukko - Åssät	1	1,80	2
	17.11.2005 18:30	Pelicans - SaiPa	X	4,30	1
	17.11.2005 18:30	HFK - Jokerit	2	2,30	1
	17.11.2005 18:30	4	2,00	13,93	0,00
	17.11.2005 18:30	Lukko - Åssät	1	1,80	2
	17.11.2005 18:30	Pelicans - SaiPa	X	4,30	1
	17.11.2005 18:30	Ives - Tappara	2	1,80	1

Alternative 2 (one gets to this page by selecting "Own bets" from the top of the page):

Avoimet vedot:

Pelituote	Kolteet	Valinta	Kerroin	Kokonaiskerroin	Panos	Mahdollinen voitto	Vedon nro.	Vahvistamisaika	Alkamisaika
1X2	HIFK - Jokerit	2	2,30	2,30	2,00	4,60	1078800	14.11.2005 14:08	17.11.2005 18:30
1X2	Ilves - Tappara	2	1,80						17.11.2005 18:30
	Lukko - Assat	1	1,80	3,24	2,00	6,48	1078788	14.11.2005 14:05	17.11.2005 18:30
Tulosveto	HIFK - Jokerit	2-3	13,00	13,00	3,00	39,00	1078744	14.11.2005 13:53	17.11.2005 18:30
1X2 (Triplasysteemi)	1								
	HIFK - Jokerit	2	2,30						17.11.2005 18:30
	Ilves - Tappara	2	1,80						17.11.2005 18:30
	Lukko - Assat	1	1,80	7,45	2,00	14,90			17.11.2005 18:30
	2								
	HIFK - Jokerit	2	2,30						17.11.2005 18:30
	Ilves - Tappara	2	1,80						17.11.2005 18:30
	Pelicans - Saipa	X	4,30	17,80	2,00	35,60			17.11.2005 18:30
	3								
	HIFK - Jokerit	2	2,30						17.11.2005 18:30
	Lukko - Assat	1	1,80						17.11.2005 18:30
	Pelicans - Saipa	X	4,30	17,80	2,00	35,60			17.11.2005 18:30
	4								
	Ilves - Tappara	2	1,80						17.11.2005 18:30
	Lukko - Assat	1	1,80						17.11.2005 18:30
	Pelicans - Saipa	X	4,30	13,93	2,00	27,86	1078712	14.11.2005 13:40	17.11.2005 18:30

Päättyneet vedot:

Pelituote	Kolteet	Valinta	Oikea valinta	Kerroin	Kokonaiskerroin	Panos	Voitto	Vedon nro.	Vahvistamisaika	Alkamisaika
1X2	Lazio - Inter	2	X	1,95	1,95	2,00	-	1017545	03.11.2005 13:27	05.11.2005 21:30
Tulosveto	Colorado - Anaheim	4-2	4-3	16,00	16,00	2,00	-	1017447	03.11.2005 13:12	03.11.2005 23:05
Tulosveto	MODO Hockey - Djurgårdens IF	4-0	4-0	35,00	35,00	2,00	70,00 *	1017434	03.11.2005 13:10	03.11.2005 20:00
1X2	Kookoo - Hermes	X	1	1,70	1,70	2,00	-	1017405	03.11.2005 13:06	03.11.2005 18:30

[← Takaisin](#)

User's comments:

Alternative 2 (our suggestion of improvement) is better, because details are visible immediately. Alternative 1 (original solution) is confusing, because user has to click links to see details. The ordering of the columns in alternative 2 (our suggestion of improvement) is better. However, the user thought that the system bet number is not interesting for anyone and it could be in the last column since start time is more interesting for the user. Highlighting of the win row is nice.

8. In the following two alternatives for the main betting view are presented. Which one of these seems more practical based on the ease of navigation, i.e. how easy it is to find a certain event?

Alternative 1:

The screenshot shows the PAF.fi website interface. At the top, the browser address bar displays 'http://secure.paf.fi - PAFin kansainvälinen pelipalvelu - Microsoft Internet Explorer'. The user is logged in as 'NIMI: TEST USER1' with a 'PELITILI: 46,24 €', 'KASINO: 0,00 €', and 'POKER: \$0.00'. Navigation buttons include 'TILI', 'POSTILAATIKKO', 'INFO', 'FAQ', 'PALAUTE', 'LOPETA', and a green 'Valitse peli' button. Below these are tabs for 'Vedonlyönti', 'Tulospalvelu', 'Avoimet vedot', 'Pelihistoria', and 'Profiili'. The main content area features a filter for 'Liiga' set to 'Kaikki' and 'Pelituotteet' set to '1X2'. A 'Näytä' button is present. The main content displays match lists for 'Saksa - Bundesliiga', 'Saksa - 2. Bundesliiga', and 'Italia - Serie A'. The left sidebar contains a 'Kuponki' section with a 'Tyhjennä kaikki' button and a 'Vedon panos on virheellinen' message. Below this is a 'Vetosit' section listing various bets with odds. At the bottom of the sidebar is a 'Järjestelmä' section with radio buttons for 'Triplasytemi' (selected) and 'Nelossysteemi', and a 'Käytä' button. The bottom of the page shows 'Done' and 'Internet' status bars.

Alternative 2:

The screenshot shows the PAF.fi website interface. At the top, there's a navigation bar with the PAF logo and user information: NIMI: TEST USER2, PELITILI: 95,90 €, KASINO: 0,00 €, and POKER: \$0.00. Below this are buttons for TILI, POSTILAATIKKO, INFO, FAQ, PALAUTE, LOPETA, and a green 'Valitse peli' button. The main content area is divided into sections: 'Etsi joukkueita' (Search teams), 'Vedonlyönti' (Betting), 'Omat vedot' (Own bets), and 'Profiili' (Profile). The 'Pelituotteet' (Betting products) section is active, showing a list of games under 'JÄÄKIEKKO' (Ice Hockey) and 'USA - NHL'. The 'Liigat' (Leagues) section on the left has checkboxes for Jalkapallo (Italy - Serie B, USA - NHL), Koripallo (USA - NBA), and Salibandy (Ruotsi - Elitserien). The 'Kuponki' (Coupon) section on the right shows a list of bets with odds and a total of 16,16. The 'Järjestelmä' (System) section has radio buttons for 'Ei systeemiä', 'Tripliasysteemi', and 'Nelossysteemi'. The 'Valitse panos' (Select stake) section has a dropdown menu and a 'Valitse' button.

- PELITUOTTEET -		1	X	2	Muut
19:55	Bofors IK - Rögle BK	2,40	4,40	2,15	
19:55	IF Björklöven - Almtuna	2,15	4,40	2,40	
19:55	IK Oskarshamn - Växjö Lakers HC	1,75	4,85	3,00	
19:55	Nybro Vikings IF - Halmstad HC	1,20	6,25	6,00	
19:55	Skellefteå AIK - IF Sundsvall	1,15	8,50	8,00	
19:55	Västerås HK - Arboga IK	1,95	6,00	5,75	

USA - NHL		1	X	2	8 kpl
23:00	Anaheim - Dallas	2,20	4,35	2,55	8 kpl
23:00	Chicago - Edmonton	2,40	4,40	2,30	8 kpl
23:00	Columbus - Los Angeles	2,95	4,40	1,95	8 kpl
23:00	Vancouver - Detroit	2,35	4,40	2,35	8 kpl

Kuponki		Tyhjennä
Vedon panos puuttuu. Aseta panokseksi 2 € - 200 €.		
Vetosi:		
Boston Utd - Swindon	1	2,25
Oldham - Chasetown	1	1,10
Oxford Utd - Eastbourne	1	1,22
Burton - Peterborough	1	3,15
Woking - Southport	1	1,78
Kerroin		16,16

User's comments:

Some details of alternative 2 (our suggestion of improvement) are better. However, the user is familiar with alternative 1 (original system), which makes it hard to compare the solutions. Good thing about alternative 2 is that the link list on the left is always visible and the user does not have to scroll down to find it after a coupon has come up on the screen. This makes selecting leagues faster in alternative 2. In alternative 1 (original system) the menus are easier to find, because they are almost in the middle of the layout. Test user usually uses those menus for selecting products and leagues. There is a possibility to choose leagues from two different places in alternative 1 (original system), so it could be better that only one possibility is provided as in alternative 2 (our suggestion of improvement). User likes to make bets from the same league, not same team, and so possibility to search teams in alternative 2 (our suggestion of improvement) feels unnecessary. The user also feels that it would be better that "Open bets" and "Settled bets" are on separate pages. User thinks that Finnish term "Omat vedot" (Own bets) is a bit confusing. There should also be some space between the betting view and the coupon in alternative 2 (our suggestion of improvement).

Appendix G: Company's Contact Person's Comments on Improvement Proposals

We discussed the suggestions of improvement with company's contact person Anssi Piirainen, who has been strongly involved in the development of the current system. He basically agreed that all of our suggestions were well-founded and generally good ideas. More detailed comments are presented below.

Piirainen agreed that the option menu on top of the page for choosing a league is unnecessary since the league can also be chosen from the navigation area on the left.

In addition to our suggestion of bolding the odds as well as underlining them to make them more visible when the mouse cursor is on top of them, Piirainen pointed out an alternative way of changing the color of the entire table cell when the cursor is on top of it. We agreed that this could be even more visible and therefore another good possibility to address the visibility problem.

During our usability evaluation an option to view all details at once was already added to the open bets and settled bets pages by EGET. According to Piirainen this was due to PAF's request to allow the users to for example print all information of their bets easily. Our suggestion to combine open bets and settled bets to same page and show all details at once and in one table row instead of two, was therefore in line with the PAF's request. Piirainen was a bit concerned whether all information could be fit in one line, but agreed that it perhaps could be done. He also suggested that dividing some column titles to two lines (especially "Kokonaiskerroin"/"Odds sum" and "Mahdollinen voitto" / "Possible win") could save some space in the table's width since the data in those columns doesn't need that much width. We also asked whether all the fields are really necessary and is for example the bet id. field legally mandatory. According to Piirainen there are no legal requirements for the fields. The only reason is what information the users could possibly want about their bets.

About our finding of the Result Center being slow and useless, Piirainen commented that the slowness was also noticed by them and for the next version of the system it is intended to be fixed. Currently a database query is done with every HTTP request, but in the future the database query results are going to be cached, which should increase the speed significantly. Also, there is going to be an option to select from which period of time the user wants to view games from the current day up to 50 days in the past and a possibility to arrange the results in alphabetic order according to the teams. Our suggested find function to search for a certain team's results hadn't been thought of, but Piirainen agreed that it could be a useful addition. Our suggestion to make the team names in the main betting view links that lead to a page that contains information related to the match in question, had already been thought of by EGET and it is probably going to be implemented.

Our suggestion to change the arrows after the preset wager amounts to euro symbols was also considered to be a good proposal by Piirainen, especially since in the future there is going to be an option to use other currencies, i.e. dollars as well. Therefore the need to better distinguish the currency that is currently in use becomes even more evident. Adding more preset wager amounts also sounded like a good idea since there is space for a few more in the coupon. According to Piirainen, the values for the preset wager amounts are determined by PAF.

About our comment of the site being ugly and spiritless, Piirainen told that PAF is already currently thinking about improving the appearance of the site. About our finding of the site not being compatible with all browsers and especially letters "ä" and "ö" not showing correctly with Mozilla, Piirainen at first thought that this behaviour could be because of the configuration of the used browser instead of the site, but when we told that those letters show correctly in the main view but as question marks in for example the info section, he agreed that this must in fact be a bug. Also, according to Piirainen, the scaling of the page would be useful, but it can be rather hard to implement.

About our suggestion to improve the system bets, Piirainen was especially pleased about the idea to hide the listing of coupons to a separate page which could be viewed optionally. This way, the coupons are shorter and therefore there is no need for the continuous scrolling.

Piirainen also agreed that adding context related help is a good idea. As an example he mentioned that when the coupon is empty, there could be instructions on how to add items to the coupon and when the system bet area in the coupon is inactive since there are not enough events in the coupon, there could be instructions on what system bet means and how to make it.